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THE  
PRACTICE OF MEDICINE:

A  
TREATISE

ON  
SPECIAL PATHOLOGY AND THERAPEUTICS.

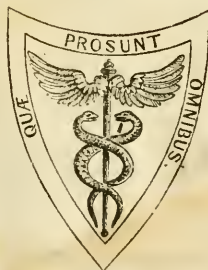
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# PRACTICE OF MEDICINE.

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## BOOK IV.

### DISEASES OF THE ORGANS OF SECRETION.

#### CHAPTER V.

##### DISEASES OF THE CUTANEOUS GLANDS.

THE diseases to be considered under this chapter may be divided into those that affect the sudoriparous or perspiratory organs; and those that implicate the cutaneous structure, or the sebaceous glands connected with it.

##### SECTION I.

###### DISEASES OF THE SUDORIPAROUS ORGANS.

The sudoriparous or perspiratory organs are situate immediately beneath the cutis vera, in every part of the body. Each glandule has but one excretory duct, which proceeds outwards spirally, and penetrates the epidermis rather obliquely. So numerous are these ducts, that it has been calculated by Mr. E. Wilson, that they issue by seven millions of pores; and that the length of the tubes united would reach nearly twenty-eight miles. From this glandular apparatus an aqueous fluid is constantly secreted, which contains lactic acid, a protein compound, and certain saline matters;—the quantity being dependent upon temperature, exercise, &c.; but, on an average, perhaps, amounting, in the 24 hours, including the pulmonary transpiration, to upwards of two pounds. In a warm, dry atmosphere, it has been known to reach to 5 pounds; whilst in a cold, damp one, it may be less than two pounds. Of this, the pulmonary exhalation is usually less than one-third. Under ordinary circumstances the exhalation is not perceptible;—it is *insensible*; but when its amount is considerably increased, or owing to the hygrometric condition of the air it does not evaporate readily, it becomes *sensible*,—or we are said to *sweat*. As elsewhere shown, (*Human Physiology*, 6th edit., ii. 273, Philad., 1846), the cutaneous secretion, like the urinary, is essentially depuratory; and it has been estimated, that at least 100 grains a day of effete azotized matter are constantly thrown off by the skin. It fortunately happens, however, that any cause, which interferes with the cutaneous depuration, adds

to the activity of the urinary, so that mischief is not often, perhaps, caused owing to the suppression of perspiration occasioning the retention in the system of matters that ought to be expelled: it can be understood, however, that by directing such matters to the kidneys, disease may be induced in these organs; and, conversely, that morbid conditions of the kidneys may be modified by exciting the cutaneous secretion. Accordingly in lithuria—as elsewhere remarked—copious ablution, with friction of the skin, and exercise, are valuable agencies.

#### I. EXCESSIVE SWEATING.

SYNON. Ephidrosis, E. profusa, E. spontanea, E. idiopathica, Hydropedesis, Hyperephidrosis, Hyperhidrosis, Hyperidrosis; *Fr.* Flux de sueur; *Ger.* Uebermässige Schwitzen.

Excessive sweating is a phenomenon that accompanies and forms part of the morbid condition in many diseases, as in hectic fever; the *Suette de Picardie*, &c. In this place, however, that form only falls under consideration, which appears to be independent of any appreciable lesion; and which may be morbid, either from the perspiration being in excessive quantity, or owing to its becoming changed in its qualities.

Excessive sweats are almost always general. At times, they have been seen affecting only half the body; and, in rare cases, are confined to detached portions of the cutaneous envelope—as the cheeks, head, &c. Occasionally, the ephidrosis is continued; at other times, it occurs at intervals more or less prolonged, and it may be periodical.

Sufficient examinations have not been made to determine whether the physical and chemical properties of the secretion are modified when it is so copious. In certain cases, it has acquired an acid, urinous, or cadaverous odour, or a penetrating fætor—*osmidrosis*—similar to that often observed in the feet or armpits. Its taste, colour, temperature, &c., may also vary materially.

It rarely happens that ephidrosis is an affection of any consequence: sooner or later the excessive secretion diminishes. If such were not the case, the powers of the individual would become lessened, and marasmus might be the result. The author has never met with such a result, nor has he, indeed, seen any case of ephidrosis, which has required much treatment.

**Treatment.**—This must obviously consist in the abstraction of everything that can be supposed to excite the secretion;—by removing the patient to a cool situation; regulating the clothing; making him sleep on a mattress; and prescribing the cold bath. A residence at the seaside, with the daily use of sea-bathing, cannot fail to be beneficial; but, after all, the main point is to inquire into the pathological cause of the excessive secretion, and to obviate this, if practicable. Generally it will be found connected with an asthenic condition of the system, and to require the employment of those agents that are adapted for giving tone. Advantage, too, may accrue from the dilute sulphuric acid, and the other agents recommended for diminishing the excessive sweating of hectic.



## II. SWEATING OF BLOOD.

SYNON. Hæmatidrosis, Ephidrosis cruenta, Sudor cruentus, S. sanguineus, Bloody sweat; *Fr.* Hématidrose, Sueur de Sang; *Ger.* Blutschwitzen.

This affection is exceedingly uncommon; yet undoubted cases occur in which a true exhalation of blood takes place from the cutaneous vessels of a portion of the surface. Cases, in which the exhalation has been general, are of extremely rare occurrence. It takes place more especially from parts in which the skin is fine,—as the extremities of the fingers, the axilla, neck, &c., but occasionally it has been witnessed where the integument is thick—as from the hairy scalp, and at times from an old cicatrix.

The surface whence the blood oozes may exhibit no change of appearance, or it may be red, swollen, and painful before the discharge takes place; but these phenomena disappear with the hemorrhage, which is rarely to any great extent; but, is apt to return, especially when connected with amenorrhœa. In such case it may recur regularly once a month. The affection is generally, indeed, met with in young females, or in those in the middle period of life, and often coincides with amenorrhœa or insufficient catamenia.

**Treatment.**—This variety of hemorrhage, being of limited extent, scarcely ever requires local management. The pathological cause, as in other cases of hemorrhage, must be inquired into, and, if practicable, removed. Should it arise from plethora, or from an impaired condition of the blood and blood-vessels, an opposite plan of treatment must be demanded in the one case from what is required in the other. In all cases,—it need scarcely be said,—care must be taken to avoid every form of physical or moral excitement.

## SECTION II.

## DISEASES OF THE SKIN.

The researches of anatomists have shown, that the cutaneous envelope is composed of at least four layers—the epidermis, the rete mucosum, the corpus papillare, and the corium; separated from the subjacent parts by cellular membrane. The *epidermis* is the thin pellicle raised by a blister, and is probably a secretion from the true skin, which concretes on the surface. Recent anatomists, MM. Breschet and Roussel de Vauzème, affirm, that there is a *blennogenous* or *mucific apparatus* for the secretion of this mucous matter, composed of a glandular parenchyma or organ of secretion, situate in the substance of the derma, and of excretory ducts, which issue from the organ, and deposit the mucous matter between the papillæ. In the next layer, if it may be so regarded—the *rete mucosum*—the colouring matter of the dark races seems to be seated; and it is affirmed, on the authority above cited, that there is a particular *chromatogenous* or *colorific apparatus* for producing this colouring matter, composed of a glandular or secreting parenchyma, situate a little below the papillæ,

and presenting special excretory ducts, which pour out the colouring matter on the surface of the derma. The *corpus papillare*, or, as it has been termed, the *neurothelic* or *mammillary nervous apparatus*, is situate next below the rete mucosum. It consists of a collection of small papillæ, formed by the extremities of nerves and vessels, which, after having passed through the corium beneath, are grouped in small pencils or villi in a spongy erectile tissue, which are readily seen when the corium is exposed by the action of a blister. These villi are the papillæ of the skin. The *corium* or *true skin* is the innermost layer, and consists of a collection of dense fibres, intersecting each other in various directions, and leaving between them holes for the passage of vessels and nerves. These four strata, which constitute the skin, in its ordinary acceptation, are comprised in the thickness of two or three lines. The cellular structure beneath the true skin is so arranged as to allow it to move readily on the parts beneath; but in a state of disease the skin may be firmly bound down by plastic lymph.

All these layers are implicated in many of the cutaneous affections, that will fall under consideration,—and in addition to them, there are certain *appendages* to the skin, that are likewise concerned:—for example, the *sebaceous* or *sebiparous follicles* or *crypts*, which are most abundant, where there are folds of the skin, or hairs; or where the surface is exposed to friction. They separate an oily fluid from the blood, and pour it over the surface to lubricate it, and defend it from the action of moisture. When the follicle becomes inflamed, and the secretion cannot escape, a common cutaneous affection results,—*acne*.

Another appendage of the skin—the *hair*—is likewise interesting in the pathological relations of the cutaneous envelope. The roots of the hair are in the form of bulbs, taking their origin in the cellular membrane; and in certain forms of cutaneous disease—as in porrigo—their nutrition becomes affected and they fall out.

The various cutaneous diseases must be regarded as resulting from some modifications in the action of the glandular apparatus, which secretes the layers of which the skin is composed. This modification may be dependent wholly upon local influences, and may require merely topical remedies to induce a new action in the part: in other cases, however, the affection appears to be connected with some *vice*, which can only be reached by remedies, that modify the state of the circulating fluid, and, through it, the action of the glands and vessels of nutrition of the part affected. In such case, the local application of appropriate remedies is often of signal service,—either employed alone, or along with suitable internal agents. The external applications come into immediate contact with the parts affected from without; and the internal agents produce their influence from within, in the manner already described, so that obstinate affections may yield to this joint action, which resisted both singly.

The classification of cutaneous diseases has always been a matter of difficulty. By some, they have all been ranked amongst phlegmasiæ of the skin,—either acute or chronic, but it is more than questionable, whether many of them can fairly be esteemed of an inflammatory nature. The nutrition of the skin is evidently altered, and the

secretions from the different glandular parenchymata are greatly modified; yet, as in similar cases of perverted nutrition and secretion, it by no means follows that inflammation exists. Some, again, have arranged them under two general divisions:—the *first* comprising those of local origin, or dependent on the skin alone,—the *second*, those of a constitutional character, produced by some cause affecting the general system, and developed through the skin. Others have adopted an arrangement according to causes:—for example, M. Dendy divides them into;—*First*, Diseases symptomatic chiefly of disorder of the alimentary canal, marked by increased cutaneous action, often by subacute or chronic inflammation. *Secondly*, Diseases indicative of debility, marked by languid cutaneous action, often the sequelæ of acute disorder. *Thirdly*, Diseases consequent on specific infection. *Fourthly*, Diseases consequent on external and common irritation; and, *Lastly*, Maculæ. Mr. Erasmus Wilson has proposed—what he terms—“a natural system of classification” of diseases of the skin,—according to which are successively considered, *First*, Diseases of the derma; *Secondly*, Diseases of the sudoriparous glands; *Thirdly*, Diseases of the sebiparous glands; and *Fourthly*, Diseases of the hairs and hair follicles. His table of classification gives a good *coup d'œil* of the diseases of the derma, as well as of the sudoriparous and sebiparous glands, and of the hairs and hair follicles.

I. DISEASES OF THE DERMA.

INFLAMMATION	Congestive . . . . .	Specific . . . . .	Rubeola, Scarlatina, Variola, Varicella, Vaccinia.	
		Nonspecific . . . . .	Erysipelas, Urticaria, Roseola, Erythema.	
	Effusive . . . . .	Asthenic . . . . .	Pemphigus, Rupia.	
		Sthenic . . . . .	Herpes, Eczema, Sudamina.	
	Suppurative . . . . .		Impetigo, Ecthyma.	
	Depositive . . . . .		Strophulus, Lichen, Prurigo.	
DISORDERED CHROMA- TOGENOUS FUNCTION.	Squamous . . . . .		Lepra, Psoriasis, Pityriasis. Scabies.	
	From Parasitic Animalcules . . . . .		Verruca, Tylosis, Clavus, Pachylosis.	
	HYPERTROPHY OF THE PAPILLÆ . . . . .		Vascular nævi, Purpura.	
	DISORDERS OF THE VASCULAR TISSUE . . . . .		Hyperæsthesia, Pruritus.	
	DISORDERED SENSIBILITY . . . . .		Melanopathia, Pigmentary nævi.	
	DISORDERED CHROMA- TOGENOUS FUNCTION.	Augmentation of Pigment . . . . .		Albinismus, Leucopathia.
		Diminution of Pigment . . . . .		Ephelis, Lentigo, Chloasma, Melasma.
		Alteration of Pigment . . . . .		Oxide of silver stain.
		Chemical Coloration . . . . .		

## II. DISEASES OF THE SUDORIPAROUS GLANDS.

AUGMENTATION OF SECRETION . . . . .	Idrosis.
DIMINUTION OF SECRETION . . . . .	Anidrosis.
ALTERATION OF SECRETION . . . . .	{ Osmidrosis, Chromidrosis, Hæmidrosis.

## III. DISEASES OF THE SEBIPAROUS GLANDS.

AUGMENTATION OF SECRETION . . . . .	Stearrhœa simplex.
DIMINUTION OF SECRETION . . . . .	Xeroderma.
ALTERATION OF SECRETION . . . . .	{ Stearrhœa flavescens, Stearrhœa nigricans, Ichthyosis.
RETENTION OF SECRETION.	{ Comedones, Small sebaceous tumours, Sebaceous accumulations, Cornua.
INFLAMMATION OF GLANDS AND ADJACENT TEXTURES .	{ Acne, Sycosis.

## IV. DISEASES OF THE HAIRS AND HAIR FOLLICLES.

AUGMENTED FORMATION . . . . .	Pilous nævi.
DIMINISHED FORMATION . . . . .	{ Alopecia, Calvities.
ABNORMAL DIRECTION . . . . .	{ Trichiasis, Felting.
ALTERATION OF COLOUR . . . . .	Canities.
DISEASES OF THE HAIRS . . . . .	{ Trichosis furfuracea, Trichosis plica.
DISEASES OF THE HAIR FOLLICLES . . . . .	{ Narcosis folliculorum, Stearrhœa folliculorum, Inflammatio folliculorum, Favus.

The most common division, however, and that, which is liable, perhaps, to the fewest objections, in a practical point of view, is according to the elementary forms. It is the one adopted by the best dermatologists, and, according to M. Schedel, is now followed in all the medical schools of Europe. It will be adopted in this work. Those diseases, however, in which the febrile affection appears to form a prominent and essential part—the cutaneous disease being merely one of the phenomena—it may be well to consider elsewhere, in consequence of their analogy with each other, and with febrile diseases in general. On this account, most of them have been thrown together by the author under the head of ERUPTIVE FEVERS.

Arranging the different cutaneous diseases according to their elementary characters, eight divisions may be admitted:—1, the *exanthematous*; 2, the *vesicular*; 3, the *bullar*; 4, the *pustular*; 5, the *papular*; 6, the *squamous*; 7, the *tubercular*; and 8, the *furuncular*. To these may be added the *maculæ* of certain writers; and some other affections that do not readily admit of classification. The four first,—the *exanthematous*, the *vesicular*, the *bullar*, and the *pustular*, have been classed by M. Grisolle as inflammations of the skin.

## I. EXANTHEMATOUS DISEASES OF THE SKIN.

SYNON. Exanthemata; *Fr.* Maladies exanthémateuses; *Ger.* Ausschlagen, Fleckigen Hautkrankheiten.

These diseases, as a class, have been considered to be acute phlegmasiæ, but some of them are certainly very different in their characters from the true inflammation of the skin, which characterizes erysipelas. They would seem, indeed, to partake rather of the nature of hyperæmia—*Dermohémie* of Piorry—than of positive inflammation. They are all characterized by diffused redness, but are not all painful to the touch; little soreness, indeed, generally accompanies measles, scarlet fever, or nettle-rash, whilst the inflamed skin is remarkably sensitive in erysipelas. In the latter disease, too, the inflammation often extends to the cellular membrane beneath, giving rise to infiltration of various kinds. In the other exanthematous affections, the tumefaction, sometimes seen, is owing also to infiltration; but it is of a serous fluid, which is readily taken up. It never happens, that the cutaneous inflammation, which constitutes the efflorescence in the view of many, ends in suppuration, or in any of the ordinary terminations of inflammation.

The chief diseases that belong to this division are—measles, false-measles, scarlet fever, urticaria, erythema, and erysipelas. Excepting erythema, however, they are eruptions accompanied by marked constitutional symptoms, and will, therefore, be considered elsewhere.

## ERYTHEMA.

SYNON. Inflammatory blush, Intertrigo, Maculæ volaticæ, Efflorescence; *Fr.* Erythème, Dartré érythémoïde; *Ger.* Hautröthe, Anflug.

This is one of the most common affections of the skin, and is distinguished by the occurrence of red, slight, superficial, and irregularly circumscribed blotches, of various extent, upon the cutaneous surface. It is usually acute, lasting from two to ten or twelve days. It is, at times, a mere local affection: the chafing of contiguous surfaces, as between the folds of the skin of infants, and of corpulent adults, in which there is inflammation of the skin, attended or not by a purulent or muco-purulent discharge, is of this character. It is the *Intertrigo* or *Erythema Intertrigo* of writers. Acrimonious discharges give occasion to an affection of the same kind.

Many insects induce an inflammation of the cutaneous surface; and the irritation of a wound or ulcer, and distension of the integuments by effused fluid,—as in œdema,—occasion more or less cutaneous inflammation, which might properly be classed under this head.

Several varieties of erythema have been enumerated by writers on cutaneous diseases. *Erythema fugax* comprises the patches that sometimes appear upon different parts of the body in febrile diseases; in children whilst they are teething, &c. &c.; and that extensive form of the disease, in which, under the influence of some constitutional cause, the whole surface of the body becomes suffused with a blush of different degrees of intensity, accompanied with a sensation of heat and dryness of the skin, which retains the print of the finger, or whole

hand when applied to it. In *erythema papulatum*, Fr. *Erythème papuleux*, of authors, the patches are at first somewhat papulated. It appears in females, and young persons more especially, and particularly on the face, neck, breast, and arms; being generally preceded by evidences of constitutional disorder. When the elevations are like small lumps, it constitutes *erythema tuberculosum seu tuberculatum*; Fr. *Erythème tuberculeux*. A more severe form is *erythema nodosum*, in which the patches are of larger size than in the last. The spots, too, are raised, as if they would suppurate; but they never do. They generally continue to be perceptible to the touch for ten or twelve days, when they recede, leaving bluish or yellowish marks behind them, which disappear in a week or two. When the prominent patches are distinctly separated from the surrounding skin, they constitute *erythema marginatum*, Fr. *Erythème marginal*. *Erythema læve*; Fr. *Erythème leger*, is that which follows any unusual distension of the skin, as in anasarca. When the integument contracts to its ordinary dimensions, extensive cuticular desquamation follows. *Erythema centrifugum* attacks chiefly the face, commencing by a small slight papular red spot, which gradually increases in circumference, and at times invades the whole face. It is essentially chronic in its character. *Erythema acrodynia*, *E. acrodynum*, of M. Biett, is an epithet given to the disease, elsewhere described, under the head of ACRODYNIA.

**Treatment.**—Erythema requires very simple or no management. Where it is produced by the abrasion of surfaces that are in contact, —washing with tepid water, and afterwards dusting the parts with some fine powder,—as powdered starch, finely levigated calamine, oxide of zinc, or finely powdered magnesia, or flour and subnitrate of bismuth in equal parts, are sufficient. This is the plan pursued to prevent and to cure the chafing in children. At times, it is requisite to keep the surfaces separate by an intervening rag or lint, or by the application of Fuller's earth moistened; and it may be necessary to wash the excoriated surfaces, produced in this way, or by acrid discharges, with gentle astringent lotions, as the *liquor plumbi subacetatis dilutus*, or a solution of the sulphate of zinc.

R.—Zinci sulphat. gr. xv.  
Aquæ fʒvj.—M.

The same treatment is required in the erythema, caused by the poison oak or the poison vine. In that which is produced by the bites of insects, or by any form of poisoned wounds,—the application of ammonia, as the spirits of hartshorn, or *spiritus ammoniæ aromaticus*, often affords marked relief, and in a very speedy manner.

Where the erythema is dependent upon constitutional causes,—as in the different varieties described,—it will cease with their removal. Usually, spare diet, perfect rest, gentle cathartics, and the tepid or vapour bath are sufficient to accomplish the cure.

## II. VESICULAR DISEASES OF THE SKIN.

SYNON. Vesiculæ; Fr. Maladies vésiculeuses; Ger. Bläschen.

Vesicular diseases of the skin appear under the form of small acuminated collections of transparent fluid effused beneath the cuticle.

This fluid either remains transparent throughout, or it becomes turbid and apparently purulent. As the fluid of the vesicles is absorbed, the epidermis often desquamates in the form of scurf, or thin scales; but if the fluid become of a sero-purulent character, it concretes into a laminated scab.

A difference has existed amongst writers on cutaneous diseases, as to the particular affections that ought to be classed under this division. Scabies, which is a chronic phlegmasia, was at one time placed amongst pustular affections of the skin, but it is now generally considered to be vesicular. There is yet a difference of sentiment in regard to varicella and vaccinia; but the former is unquestionably, in the generality of cases, vesicular; and, by some, the latter is thought to be so likewise; although it is more frequently, perhaps, classed amongst the pustular affections.

A great diversity exists between the different diseases that are ranged under this head, both as regards the local and the general phenomena,—some of them being preceded by great constitutional disorder, whilst in others the general symptoms are slight or almost null. They are—miliaria, chickenpox, herpes, eczema and scabies; the two first, however, being essentially eruptive fevers, will be treated of elsewhere.

### 1. HERPES.

SYNON. Ephlysis Herpes, Cytisma Herpes, Tetter; *Fr.* Dartre, Olophlyctide, Herpès; *Ger.* Flechte, Schwinden, Bläschenflechte.

The term *tetter* like the French *dartre*, is used for various eruptions, but when we speak technically of herpes, we mean an eruption consisting of clusters of vesicles having inflamed bases; the clusters being separate and distinct from each other, and having skin of the natural hue between them. Usually, the vesicles terminate in from a week to a fortnight, in the formation of incrustations. The lymph in the vesicles is at first clear and colourless, but becomes gradually milky and opaque; and ultimately concretes into scabs. The disease is not communicable.

When herpes is extensive, it is generally preceded by great constitutional disturbance, and almost always there is an inconvenient sensation of heat and tingling, and, at times, severe pain in the seat of the eruption. The diagnosis is sufficiently easy:—a cluster of vesicles of different sizes crowded together upon an inflamed ground will always, with due attention, prevent it from being mistaken for any affection of a different nature.

Several species of herpes have been pointed out by different writers on cutaneous diseases. The form which has been regarded as the type to the whole group, is *Herpes phlyctænoides*, *H. phlyctænodes*; *Fr.* *Herpès phlycténoïde*; *Ger.* *wasserblatterartige Flechte*. When it is seated on the lips and angles of the mouth, it is termed *Herpes labialis*; *Ger.* *Lippenflechte*; when on the prepuce, *Herpes præputialis*; and when in the form of a belt across the shoulders, or around the waist, the *Herpes zoster*, *Zona* or *Zoster*, *Z. ignea*, *Z. serpiginosa*, *Erysipelas zoster*, *E. phlyctænodes*, *E. pustulosa*, *Cingulum*, or *Shingles*;

Ger. *Gürtel*, *Flechtengürtel*, *Gürtelrose*. When, again, the vesicles of herpes, instead of appearing clustered into simple groups, or strung together into bands, assume an annular form, the disease has been termed *Herpes circinnatus*, or *Vesicular ringworm*; and when each cluster of vesicles is surrounded by a number of erythematous rings, presenting different shades of colour, it has been called *Herpes iris* or *Rainbow ringworm*. But, although dermatologists have made these subdivisions, it is scarcely necessary to say, that difference of locality or of appearance can make no essential difference in the affection. It is still *herpes*; and hence the multiplication of names according to difference of locality has been very properly animadverted upon by Dr. Mackintosh.

**Causes.**—These are very obscure. An eruption of herpes is not uncommon, when there has been febrile irritation present, especially of the catarrhal or gastric kind. A vesicular eruption appears upon the lips and angles of the mouth, which, as it generally occurs towards the termination of these affections, has been regarded by the unprofessional, and even by some of the profession, as a salutary effort of nature. The writer, just cited, remarks that he has often seen different forms of herpes, particularly that described as herpes zoster, occur in the course of bronchial inflammation, but more particularly when there were marks of a disordered state of the stomach and bowels. Females—it is affirmed—are more subject to it than males, and the delicate more than the strong and the athletic. Occasionally, it breaks out annually, about the same period, and for a succession of years; and as the *rhus radicans* and *rhus toxicodendron*—the *poison vine* and the *poison oak*—give rise to an eruption of the same character, the individual is apt to ascribe the disease to being *poisoned*. Two cases—in which a similar vesicular eruption was produced by the leaves of the *pastinaca sativa*, or *common garden parsnep*, on the extremities of individuals who worked in a garden where the vegetable was cultivated—were seen by the author, and are described in the *American Medical Intelligencer*, for Oct. 1, 1838, by one of the then resident physicians of the Philadelphia Hospital, Dr. Vedder, now of Schenectady.

**Treatment.**—The different varieties of herpes require but little medical management. The constitutional symptoms rarely run so high as to demand the use of the lancet. Commonly, low diet, with gentle cathartics, is all that is necessary. It will be advisable, however, whilst any febrile disorder exists, that the patient should be confined to the house. In regard to the local treatment, difference of opinion has existed. Whilst some restrict it to washing the parts with tepid milk and water, or with mucilage; others recommend oleaginous and other applications, possessed, more or less, of astringent or excitant properties. Chloride of lime,<sup>a</sup> chlorine,<sup>b</sup> hydrocyanic acid,<sup>c</sup> creasote—in solution,<sup>d</sup> or ointment;<sup>e</sup> soot;<sup>f</sup> cyanuret of mercury;<sup>g</sup> the red iodide of mercury;<sup>h</sup> the tincture of iodine, pencilled over the parts, especially in herpes circinnatus; the iodide of potassium;<sup>i</sup> and the codliver oil—*oleum jecoris aselli*, administered both externally and internally—have all been employed.



- <sup>a</sup> R.—Calceis chlorin. ℥ij.  
 Aquæ Oj.—M.  
<sup>b</sup> R.—Aquæ chlorin. f ℥j.  
 Ol. olivæ f ℥j.—M.  
<sup>c</sup> R.—Acid. hydrocyan. f ℥ij.  
 Aquæ Oij.—M.  
<sup>d</sup> R.—Creasot. f ℥ss.  
 Aquæ destillat. f ℥v.—M.  
<sup>e</sup> R.—Creasot. f ℥ss.  
 Adipis ℥j.—M.
- <sup>f</sup> R.—Fuligin. p. j.  
 Adipis p. ij.—M.  
<sup>g</sup> R.—Hydrarg. cyanur. gr. xvi.  
 Adipis ℥j.  
 Ol. limon. gtt. xv.—M.  
<sup>h</sup> R.—Hydrarg. iodid. rubr. gr. xv.  
 Adipis ℥j.  
 Ol. bergamot. gtt. x.—M.  
<sup>i</sup> R.—Potass. iodid. ℥j.—℥iss.  
 Adipis ℥j.—M.

Very obstinate cases may require the internal use of the preparations of iodine, combined with syrup, as advised under various chronic cutaneous diseases.

It has been recommended to open the vesicles early, and apply an emollient cataplasm over them, and, it is affirmed, that in *herpes zoster*, where the pain is very severe, the best effects will be produced by the application of a dozen leeches to the inflamed part. If done early, before many vesicles have appeared, says Dr. Mackintosh, the farther progress of the disease will be stopped. Small blisters, applied to the inflamed skin, in the vicinity of the vesicles—it is said by Mr. Plumbe—check their extension, and produce a shrivelling of those already formed. The ectrotic treatment is considered by Mr. Wilson to be applicable to all the varieties of herpes. He advises, that the vesicles should be carefully punctured with a needle, and the sharp point of a pencil of nitrate of silver be introduced for an instant into the opening. “In pursuing this plan, the possibility of some visceral disease should not be lost sight of; and as the cutaneous irritation will be diminished by the remedy, an artificial counterirritant should be adopted in its place.”

## 2. ECZEMA.

SYNON. Ecephlysis Eczema, Cytisma Herpes, Humid tetter, Running scall; *Fr.* Eczème, Dartre squammeuse humide, D. vive, Gale épidémique; *Ger.* Hitzblätterchen, Hitzblaschen.

This is a common affection,—like the last, not capable of being communicated from one person to another; consisting of an eruption of small vesicles, clustered together in patches of no determinate size, and terminating either by the absorption of the fluid of the vesicles, or by their rupture, which occasions the formation of thin, flaky incrustations. All the varieties that have been admitted by dermatologists may be included under two heads, the *acute* and the *chronic*.

1. *Acute eczema*.—This generally appears and proceeds rapidly, terminating in eight or ten days. The eruption is preceded by a feeling of heat and tingling or creeping in the parts on which it is about to appear. The skin then assumes a rosy hue, and the vesicular eruption succeeds.

Three varieties of acute eczema are usually pointed out by pathologists. *a. Eczema simplex*, which is limited to a small surface, and is rarely accompanied by general symptoms; but, at times, invades a greater extent, and is then preceded and accompanied by more or less indisposition. *b. Eczema rubrum*, which is a much more severe form; occurring on a red inflamed surface, and preceded and accompanied by marked febrile symptoms. The parts on which the erup-

tion is about to appear, are hot, red, and swollen;—and soon, a multitude of minute vesicles are seen, which preserve their transparency for two or three days, and then assume a milky appearance. The vesicles give way, and the fluid escapes. The denuded skin now inflames; epidermic incrustations are secreted, which soon fall off, and are succeeded by others. The discharge from the vesicles, flowing upon a surface previously inflamed, adds to the inflammatory irritation, and gives occasion to slight excoriations, from which a watery secretion flows in greater or less quantity. Gradually, the serous exudation ceases; the incrustations become drier, and continue for a longer time; the skin returns slowly to its natural condition, and the disease terminates in between two and three weeks. Frequently, however, it continues for months, and constitutes chronic eczema. *c. Eczema impetigenoides.* This is the severest form of the disease; the three varieties can, indeed, be considered in no other light than as constituting so many grades in severity of one and the same disease. The inflammation is moderate in the first, and the vesicles are distinct, though collected in clusters and transparent; in the second, it is more severe, and the vessels are milky and confluent; in the third, it runs very high, and the vesicles coalesce from the first, so as to constitute a kind of bleb, which contains a quantity of sero-purulent matter, and pseudo-membranous formations. In the eczema impetigenoides, the tension, heat, and redness of the skin are considerable, and the pain is very acute and lancinating. The vesicles very rapidly become purulent, and the liquid they contain concretes, and forms greenish laminated incrustations, which are not long in falling off, and expose a surface as red as carmine. If the eruption be very extensive, the amount of ichorous matter, discharged from it, is excessive. This form may become chronic, and persist for several weeks, passing from one part of the cutaneous surface to another, or it may become general; but usually it is confined to some part of the body.

2. *Chronic eczema.*—This may be the result of any of the three varieties described, but it more commonly succeeds to the two last. In such case, after the vesicles have broken, the inflammation augments, and invades the deeper-seated layers of the skin, and even the subcutaneous cellular tissue. The skin being continually irritated by fresh vesicular eruptions, and by the contact of the ichorous secretion, becomes excoriated and furrowed with deep fissures. The dressings require to be repeatedly changed, as the discharge is often of an extremely disagreeable odour. They are liable, too, to be glued to the abraded surfaces, so as to require great care in their removal:—even with every precaution, the affected parts are made to bleed, and are more and more irritated by every attempt to protect them. The surfaces, affected in this manner, have been compared to a blister in a state of active suppuration. They seem perforated, as it were, with a multitude of pores from which the discharge issues. The combined pain, itching, and scalding, are often almost intolerable, and prevent sleep.

When the disease is left to itself, it may continue for months and even years. Its decline is marked by the itching and smarting becoming more endurable; the discharge diminishing, and at length

ceasing; the incrustations becoming successively drier and finer, and the surface of the corium exhibiting less evidence of inflammation. It is generally long, however, before the skin loses its preternatural redness and tender appearance. There is no portion of the cutaneous surface, which is not liable to attacks of it; but parts, that are most plentifully supplied with follicles, seem to be more subject to it than others; hence, it occurs more frequently about the groins, scrotum, perinæum, axilla, bend of the arms and popliteal regions; and, in infancy, on the scalp; and, although the disease is identical, whatever may be its seat, it presents some peculiarities dependent thereon.

*Eczema of the hairy scalp* has been confounded, under the names of *Tinea* and *Porrigo*, with other affections of the same part, which are very different in their elementary forms. It occurs during dentition, and even afterwards; and the discharge is so profuse, that the head appears as if dipped in some glutinous liquid. By and by, the secretion dries into crusts, and mats the hair into little separate tufts. The affection usually invades the whole scalp; but generally the inflammation does not penetrate to the bulbs of the hair. The head is hot, and when the hair is removed by the scissors, the scalp appears red and tense, and the itching is so violent, that if the hands of the little patient be free, he will scratch until the blood flows. The lymphatic ganglions of the neck become inflamed, and sometimes suppurate; and in one case which fell under the author's care, the inflammation terminated in gangrene.

A variety of the humid scalled head, in which the humour from the excoriated surface runs down upon the hairs, and incloses them in little silvery pellicles or sheaths, has received the name of *asbestos scall*.

*Eczema of the face*, at an advanced stage, and occurring in young children, has frequently been described under the names *Crusta lactea*, *Achores in facie*, *Lactumina*, *Tinea faciei*, *Porrigo larvalis*, &c. It is very commonly coexistent with a like affection of the scalp. When the eyelids are attacked, inflammation of the conjunctiva is apt to be induced.

*Eczema of the external ear* is a common and obstinate variety. Its characters are those of eczema in general; the ear is often swelled to twice the natural size, and the meatus auditorius externus so diminished, that total closure is at times apprehended, and agents, such as pieces of prepared sponge, or dried gentian root have been introduced, so as mechanically to prevent closure.

*Eczema of the organs of generation* of both sexes is one of the most distressing affections that can be conceived. In the female, it commonly appears upon the labia majora; but, at times, the inflammation extends around, so as to produce great tumefaction of the parts, and intolerable smarting and itching. This affection must not be confounded with an inflammation of the inner surface of the labia, in which the follicles are found to be tumefied, over a red, injected surface, which is lubricated by a copious exhalation; but there is no erosion or consecutive desquamation—an important distinctive character, and one which, according to M. Bielt, prevents all mistake.

It often affects the *scrotum*; and, when it implicates the *penis*, erection is excessively painful, and occasions laceration of the derma, and occasionally a copious discharge of blood. When the disease attacks the *anus*, it gives rise to almost intolerable suffering, which it is not easy to obviate. The affection may be limited to the verge of the anus, or it may extend to the parts in the vicinity. When it is seated in the *bend of the arms*, the *groins* and the *popliteal regions*, excoriations and deep fissures may be produced, owing to the constant motion of the parts. Eczema around the *nipple* is apt to assume the chronic form, and to be extremely rebellious to every method of management. When the disease appears on the upper or lower extremities, it must be diagnosticated by its elementary characters. It is in the aged that it is most frequently seen on the legs, whence it usually extends to the insteps and toes. When it is seated on the hands, it gives rise to a very troublesome and painful form of the disease. As the parts are extremely movable, every joint is, sooner or later, surrounded by deep chaps, which bleed whenever the fingers are used. The disease in these cases, often attacks the parts about the roots of the nails, and either occasions a deformity of the nails, or their total loss.

**Causes.**—It is generally admitted, that eczema is not a communicable disease, yet it is affirmed to have been transmitted *per coitum*. A modern writer, M. Rayer, asserts, that he has seen several cases of the kind. It would appear, too, that when the discharge is copious, the contact of the secretion may develope the eruption upon healthy parts. Its causes are generally very obscure. An eczematous eruption would appear to be developed on the application of certain irritants to the cutaneous surface:—thus, exposure to the sun's rays gives rise to *heat eruptions*—*eczema solare*; and the application of a blister or stimulating plaster; friction with mercurial or sulphureous ointments; and working in certain irritating matters, and, indeed, in matters that are not usually irritating—as sugar, flour, &c., may occasion it. A form of eczema is likewise induced by the action of mercury on the system—*eczema mercuriale*; and another from the use of sulphur—*eczema à sulphure*.

**Treatment.**—This may be divided into that which is appropriate for the *acute*, and for the *chronic* form. Acute eczema is commonly a slight affection; but the chronic is often a very serious one, resisting the most appropriate means of cure. It may, likewise, accompany lichen, scabies, impetigo, and ecthyma; and it has been seen to change its character, and put on the bulbous form of pompholyx. In the milder forms, it is but necessary to be abstinent and to enjoin perfect quietude, and the use of tepid bathing, especially to the parts affected, with gentle laxatives. Should the eruption, however, continue,—along with the tepid bath, the alkaline bath, made by adding five or six ounces of the subcarbonate of potash of commerce; or the sulphurous water bath, made by adding three or four ounces of the sulphuret of potassa, to an ordinary bath—say, of 20 gallons—may be recommended. A wash of the *liquor plumbi subacetatis*, properly diluted, has also been advised to be kept applied to the affected parts.

R.—Liq. plumb. subacetat. fʒj.  
Aque destillat. Oj.—ij.

Dr. Green, who restricts his attention almost wholly to local means, advises, that the whole of the diseased surface should be covered with an ointment composed of one drachm of calcined magnesia, rubbed into two ounces of melted lard. This ointment is scarcely greasy to the feel, and Dr. Green has found it much better than the chalk ointment frequently used. Being a little warmed, it is smeared over the eczematous surface, which is then covered with tissue paper, and the longer it can be allowed to remain without removal the better: at first, it may require to be renewed once or even twice a day, which is easily done,—any parts of the tissue paper, that are not positively pushed off by the discharge, are allowed to remain, and when the discharge has broken through, and has, as it were, washed away the paper, the ointment is again applied, and a patch or several patches of the tissue paper, according to the extent of surface, is put over it as before. The tissue paper he allows to remain until the parts get well; or if it falls off before the cure is accomplished, another dressing is applied. During this treatment, the patient is kept quiet; and, according to Dr. Green, it is surprising how soon the eczema will heal under this method, “cases that have previously required incessant attention, and no amendment after months of treatment, often get well in three or four weeks.”

In the *Eczema rubrum*, and, *à fortiori*, in the *E. impetigenoïdes*, more active treatment is needed. Bloodletting may be necessary; and it may require more than one repetition; leeches have also been advised around the parts affected, but their effect must be equivocal, for the reasons elsewhere stated. (See *ERYSIPELAS*.) All excitant applications must be avoided in these varieties, and the topical agents must be of a soothing character. Local bathing, with infusion of slippery elm, flaxseed, and similar emollient infusions, appear to afford greater relief than oils and ointments, which become rancid. The *oleum jecoris aselli* or codliver oil has been found, however, productive of much benefit.

It is hardly necessary to say, that when the causes are appreciated, they must be removed if practicable.

In *chronic eczema*, both the acid and the alkaline treatment have been highly extolled; and, what is singular, they have been recommended in conjunction, by a distinguished pathologist! “In the chronic eczema,” says M. Andral, “we must prescribe the sulphuric lemonade, which is made as follows:—*Sulphuric acid*, ʒj., *barley-water*, a quart; mix. This lemonade is very efficacious. We may prescribe, at the same time, baths of starch, baths of gelatin, or alkaline baths; and for drink, the following tisane may be given: *Subcarbonate of soda*, ʒss.; *cherry water*, or *barley water*, a quart.” To allay the extremely troublesome itching, a bath at 88° or 90° Fahrenheit may be used; and if this should fail, the alkaline bath described above. The sulphurous water-bath has often a beneficial effect. With the same view, a wash of the *liquor plumbi subacetatis*, the emollient infusions already referred to, the greatly diluted hydrocyanic acid, or the *aqua lauro-cerasi*, may be prescribed.

R.—Acid. hydrocyan. f ʒij.  
Aquæ Oij.—M.

When the disease has become indolent, still more powerful means are demanded. The sulphurous waters internally, and their employment externally, are often of essential service; the vapour bath—not too hot—is likewise of advantage; and it is advisable to administer such agents as—by modifying the condition of the blood, and, through it, that of the system of nutrition—may induce a salutary change in the diseased surface. The internal use of the arsenious acid,<sup>a</sup> or of the solution of arsenite of potassa, (gtt. viij. ter die) or of the arseniates of ammonia or soda,<sup>b</sup> often proves extremely beneficial.

<sup>a</sup> R.—Acid. arsenios. gr. j.  
Micæ panis q. s. ut fiant pilulæ  
xij.—M.

Dose, one, three times a day.

<sup>b</sup> R.—Ammon. arseniat. gr. j.  
Aquæ destillat. f ʒj.—M.

Dose, eight drops, three times a day.

Small patches of very obstinate chronic eczema have been benefited by the use of excitant ointments, such as the *unguentum hydrargyri oxidi rubri*, the *unguentum hydrargyri nitratis* or citrine ointment reduced,<sup>a</sup> or an ointment of the iodide or red iodide of mercury,<sup>b</sup> or of creasote.<sup>c</sup>

<sup>a</sup> R.—Ung. hydrargyri nitrat. p. j.  
Adipis p. iv.—M.

<sup>b</sup> R.—Hydrargyri iodid. rubr. gr. vj.  
Adipis ʒj.—M.

<sup>c</sup> R.—Creasot. gtt. xv.  
Cerati simplicis  
Ol. olivæ aa. ʒj.—M.

Should any of these ointments prove too excitant, they may be reduced by an additional quantity of the lard, or of the cerate and oil, according to the precise excipient employed in the formula.

The internal use of the preparations of iodine, as advised under the different chronic affections of the skin, may doubtless, also be of use here; but after all, in these chronic cases, the most important benefit is to be expected from the revulsion in the whole system of nutrition induced by a thorough change in the influences that surround—and have been in the habit of surrounding—the patient. In this country, where travelling is within the means of almost every individual, the best change, especially if he have lived in any of the Cis-Alleghany cities, or indeed, in any part of the lower country, is to send him to the White Sulphur Springs of Virginia, which are seated so far above the level of the sea as to furnish a thorough mutation in all the atmospheric influences; whilst the water, and the deposit from the waters—*Boue des Eaux*—are admirably adapted for the internal and external treatment of the disease. There are many other sulphurous waters, which, of themselves, would be equally well fitted for these obstinate eczematous cases, but few, which afford the other revellent advantages to the same amount as the White Sulphur waters. In France, the waters of Baréges and Cauterets are especially extolled; in England, those of Harrowgate.

Some slight modifications in the treatment are demanded by the seat of the affection. If on the hairy scalp, the hair should be frequently cut close, in order that emollient cataplasms may be freely applied. It has been recommended to combat the great swelling of the ears, caused by eczema of those parts, by the repeated application

of small cupping-glasses with the scarificator on the mastoid region. The parts may, likewise, be covered by emollient and narcotic fomentations and cataplasms. The leaves of the datura stramonium, dipped in warm water, might be used, in such cases, as well as in eczema in general, with advantage.

It has been already remarked, that the meatus auditorius is occasionally closed up, and that, to prevent total obliteration, pieces of dried sponge, &c., have been introduced; but these are not indispensable, as the aperture returns to its natural condition on the subsidence of the swelling.

When eczema occurs on other parts, it must be treated by the general principles already laid down.

### 3. SCABIES.

SYNON. Psora, Ecpyesis scabies, Phlysis scabies, Itch; *Fr.* Gale, Rogne; *Ger.* Krätze.

This is one of the most common and loathsome of cutaneous affections; and as it occurs, in the greatest degree, amongst the poorest and filthiest classes, it is considered a disgrace when met with in respectable persons; although all are liable to receive it from impure contact, and the disgrace is less in acquiring than in retaining it. It is an affection that is highly communicable, and is characterized by minute vesicles slightly raised above the level of the skin, transparent at the top, and containing a serous viscid fluid. These vesicles are constantly accompanied by incessant itching, and, hence, the vulgar name of *itch* given to the disease. They may occur on every part of the body—the author has not seen them, however, on the face—but they are most frequently observed, especially at the commencement, between the fingers, and at the flexures of the joints of the limbs.

Scabies—it is believed by many—never arises spontaneously, but can always be traced as a consequence of infection. It is certainly, however, difficult—and, at times impracticable—thus to trace it. It is asserted, too, by some, that the time which elapses between the infection and the appearance of the disease, has been pretty accurately ascertained; that in children it varies from four to five or six days; in adults, from ten to twenty days, according to the season,—the period of incubation being longest in winter; and that, in the aged, the interval is yet further protracted, and still more so, according to M. Schedel, when any internal inflammation exists. The period of incubation is not, however, as accurately determined as has been stated; and the variation in its appearance, under the different circumstances just narrated, amply confirms this.

**Diagnosis.**—The first symptom of scabies is violent itching in the parts affected, which is increased by the warmth of bed and by alcoholic drinks. If these be now examined with the aid of a magnifying glass, minute vesicles are perceptible, which are of a slightly rosy hue in young and sanguine individuals, and of the same colour as the skin in the debilitated and the valetudinarian. These vesicles are commonly seated, in the first instance, on the hand, between the fingers and on the wrists, because the disease is usually communicated by the contact of hands. When the itching is excessive, as it generally is, the

patient ruptures the little vesicles by scratching; and the viscid fluid escapes and concretes in small scales, or thin and slightly adherent incrustations. When the disease is permitted to run on, and but little attention is paid to cleanliness, the irritation of the cutaneous surface is at times so great, that other phlegmasiæ of the skin are engendered, which complicate the case, and render the diagnosis more difficult. The sweat is said to have a mouldy odour.

The affection—it would appear—rarely or never terminates spontaneously. If left to itself, it may continue for years, and even for the whole life.

It is an interesting, and not always an easy question to determine whether a suspected case of scabies be really such; and the reputation of the young practitioner may, at times, depend greatly on his correct decision. In the diagnosis of this, as well as of every cutaneous affection, it is important to bear in mind the elementary form of the disease, which is unequivocally vesicular at its inception. From prurigo it may be discriminated by the circumstance, that in the latter, the eruption is papular, and is seated on the back, shoulders, and outer surfaces of the limbs, whilst the itch affects the folds of the articulations, the inner surface of the limbs, the abdomen, &c. From eczema it may be known by the vesicles being united more in groups, and the parts being more inflamed than in scabies. Moreover, the eruption in eczema generally appears in parts where the perspiration is most copious, and the hair and sebaceous follicles are most abundant. It is accompanied, likewise, by a feeling of stinging rather than of violent itching. The *experimentum crucis*, in all doubtful cases, would be the discovery of the animalcular cause; but this is not always easy, as will be shown presently.

**Causes.**—It has been already remarked, that many believe scabies to be always the result of contagion, but that it is extremely difficult to trace it in all cases. If, too, it be admitted to extend in this manner, unquestionably a predisposition is given by locality, diet, habit, &c. The affection prevails more in some countries, and in certain parts of the same country, than in others. In Scotland, it is so common, in many parts, as to have acquired the *sobriquet* of the *Scotch Fiddle*. It is also very common in Ireland, the north of England, and in France; and recently it has received a great deal of attention from the therapeutists of Germany. In Scotland, and in the north of England, it has often been ascribed to the free use of oatmeal, but this would not seem to be an adequate cause. Young people are more liable to it than old, and in the army, it is said by Dr. Mackintosh, to be very rare to see an old soldier affected with it,—the subjects being chiefly recruits, who have recently joined, and who had either brought the disease into the service with them, or had caught it from other recruits, they themselves being predisposed to it by change of diet and habits.

Clothes, worn by persons affected with itch, are frequently the vehicles of infection. It is not uncommon, too, for persons who have slept in the same bed with one labouring under the disease, to be attacked by it; and they, who have been cured, not unfrequently suffer



by a recurrence to the same clothes, which they wore whilst they were suffering under the affection, without having taken the precaution to purify them. It is affirmed by M. Andral, that there are many examples of the communication of scabies from animals—and especially the dog—to man; and that some years ago, several workmen at the Jardin des Plantes contracted the disease by attending upon a camel affected with it. An anatomical assistant to the museum asserted, that the insect of this itch belonged to another species, but this was not confirmed by the researches of MM. Bielt and Schedel.

It was an old idea, that the eruption of scabies is occasioned by the irritation and burrowing of a peculiar insect; but the difficulty in always discovering it had thrown doubts on its existence. Of late years, the subject has been revived, and the presence and characters of the insect, *Itch mite*, *Acarus scabiei*, *Sarcoptes hominis*, *Sarcoptes exulcerans*, established. In 1812, the *ex-pharmacien* of the Hôpital St. Louis, at Paris, M. Galès, affirmed, that he had examined more than three hundred of these animalcules, and found that they always had the same shape, and nearly the same size,—with slight differences, which he ascribed to differences of sex. The great resemblance, however, of the insect described by M. Galès to the mites of cheese, threw distrust over its very existence; and a recent dermatologist, Dr. J. Green, affirms, that he had always inclined to side with those who maintained, that the insects, figured as *Acarus scabiei* and *Sarcoptes scabiei*, were nothing more than stray *pediculi* or cheese mites. He adds, however,—“recent inquiries would seem to place the existence of the acarus beyond the reach of doubt, and very lately, indeed, (Nov. 1836,) whilst passing through the wards of the Hôpital St. Louis, under the guidance of the Baron Alibert, I had an opportunity of seeing Dr. Gras extract three specimens of living acari, with the point of a pin, from the hand of a female, recently admitted into the hospital to be treated for scabies.” It was not until the year 1834, and after several distinguished individuals had tried in vain, that the mode of discovering these insects was clearly appreciated. A medical student from Corsica, M. Renucci, who had frequently seen his countrywomen extract them, and had extracted them himself, showed that the acarus is not to be found in the vesicle, but at the end of a small reddish furrow, sometimes straight, at others crooked, and about two lines in length, which begins at the vesicle and ends at the insect. A minute, subcuticular white spot is often perceptible near a distinct vesicle; and on raising the cuticle with a pin, a small white body, which moves when raised on the point of the pin, is seen: this is the acarus. Upon certain spots, where the animal either penetrates deeper in the epidermis, and comes in contact with the cutis, or where it deposits its eggs—for which purpose it usually selects the hair or cutaneous glands—vesicles and pustules are formed in consequence.

M. Aubé, regards the insect as a nocturnal animal, which profits by night to attack its prey on a multitude of points, and returns, in the daytime, to the dark furrow, which serves as an asylum for it. His inferences are—*first*, that itch is symptomatic, and produced by the presence of an arachnoid insect, called *sarcoptes hominis*; *secondly*,

that it is only contagious by the transmission of this insect; *thirdly*, that the contagion is frequent in the night, rare in the day; and *fourthly*, that the sole object of treatment ought to be, to destroy the acarus and its ova. Similar opinions have been entertained by others. According to M. Vogel, experiments, instituted on the human subject, and, in still greater number, with the entirely analogous itch-mites of animals, prove that the transference of acari is capable of producing the itch in healthy individuals. If males only are transferred, a transient irritation may ensue, but no psoric eruption, since the transferred parasites cannot multiply, and their individual action, unless many are transferred, is too slight to induce a perceptible eruption. If, on the other hand, females are transferred the disease is induced. M. Vogel admits, however, that a cutaneous disease perfectly similar to the itch may be produced by other causes than the itch-mite. Much, therefore, remains to be settled in regard to the pathology of the affection. Mr. Erasmus Wilson places scabies as the only example of "inflammation of the skin induced by parasitic animalcules inhabiting the epidermis," and forcibly remarks, "I am thoroughly convinced, and so long as I possess the conviction, shall ever continue to maintain, that the acarus is the sole and only cause of scabies, and that every eruption, however acuminated and well defined its vesicles, if it be deficient in the living cause, is not scabies." Yet it is not easy to understand, how scabies is so readily communicated by contact, under the idea that it must be conveyed by the insects, as it is by no means a matter of facility to extract them from the furrow where they are domiciliated. It has been maintained by M. Krause, who believes in the inseparable connexion between itch and the acarus, that the disease may exist in those, who wash themselves very often, or who have very tough skins, without any eruption:—the itching and the power of communication, he affirms, may be present, without any visible sign of the disorder except the burrows of the insects.

**Treatment.**—Notwithstanding the assertion of speculatists, that a host of diseases is caused by repelled itch, there can be no doubt, that the constitution is little, if at all, concerned in scabies, unless it has existed for a long time, and that it is perfectly safe and proper to remove it as speedily as practicable. The most effectual mode for this purpose is, unquestionably, the use of sulphur. Many forms of preparations have been employed. In mild cases, or such as occur in young children, the *unguentum sulphuris* of the American and British Pharmacopœias, which consists of one part of sulphur to four of lard, will be powerful enough, when conjoined with the internal use of sulphur,—the very disagreeable odour being, in some measure, masked by the addition of a little oil of lemon or oil of bergamot; but in more obstinate cases, the *unguentum sulphuris compositum* of the Pharmacopœia of the United States, which contains,—in addition to the sulphur,—ammoniated mercury, benzoic acid, oil of lemons, sulphuric acid, and nitrate of potassa, may be substituted. The author is more in the habit of prescribing the *unguentum sulphuris compositum* of the London Pharmacopœia.

R.—Sulphur. ℥ij.  
 Veratri pulv. ℥j.  
 Potassæ nitratis ℥ss.  
 Saponis mollis ℥ijj.  
 Adipis ℥ix.  
 Ol. bergamot. ℥xv.—M.

M. De la Harpe recommends the following formula for an ointment, which he has employed satisfactorily in upwards of 500 cases:—

R.—Sulphur. p. xvj.  
 Zinci sulph. p. ij.  
 Veratri pulv. p. iv.  
 Sapon. mollis p. xxxj.  
 Adipis p. lxij.—M.

The ointment of Helmerich, modified by M. Biett, is much used by many practitioners in France.

R.—Sulphur. p. ij.  
 Potass. carbonat. p. j.  
 Adipis p. viij.—M.

Any of these, or other ointments, of which the essential basis is sulphur, should be applied freely to the affected parts, at least night and morning, for five or six days. The ointment should be rubbed in before a good fire, and it is advisable for the patient to wear the same clothing, and perhaps even to keep his apartment. During the whole of this time, he should take internally either sulphur alone, (℥ss., night and morning, in milk,) or associated with the bitartrate of potassa.

R.—Sulphur.  
 Potassæ bitartrat. aa. ℥ij.  
 Theriac com. ℥vj.—M.  
 Dose, a teaspoonful, night and morning.

Some advise, that a fourth part of the surface of the body should be rubbed over with the ointment used; and they affirm, that four inunctions are commonly sufficient to remove the disease; whilst others, again, are satisfied with one thorough inunction;—recommending, that the patient should be placed before a good fire in the evening; that he should be thoroughly anointed from the nape of the neck to the ends of the fingers and soles of the feet by an assistant; and that he should put on afterwards a pair of old drawers, socks, and gloves, in addition to a calico night-gown, and betake himself to bed, where he must remain for the next twelve or eighteen hours, when he may rise, go into a warm bath, and free himself from the remains of the application by means of soap, especially soft soap and flannel. The soft soap—which is formed by the union of oil and potassa—has itself been brought forward of late, in Germany, as a remedial agent in cases of itch, and has been employed in many hospitals with very great success. It is cheap, and many of the writers cited regard it as one of the best methods of treatment in use.

The single application of sulphur over the whole body, as advised above, is the mode preferred by distinguished individuals, and it is undoubtedly, in most cases, all sufficient. If necessary, the inunction should be repeated.

The great objection to sulphur—effective as it is—is the disagreeable smell, which announces, in language not very equivocal, the nature of the malady. On this account, persons of the better classes are often unwilling to have recourse to it. The ointments are especially objectionable. Accordingly, the sulphurous water-bath has been employed, as well as a liniment of the sulphuret of lime,<sup>a</sup> and where there are facilities for it, the sulphur fume-bath may be administered once or twice a day.

<sup>a</sup> R.—Calcis sulphuret. ℥ss.  
Ol. oliv. q. s.—M.

To be rubbed twice a day on the palms of the hands, for ten or fifteen minutes each time.

For the same reason, many other preparations have been used—as the *unguentum acidi nitrosi* of the Edinburgh Pharmacopœia; the *unguentum hydrargyri ammoniati*; and the *unguentum veratri albi* of the Pharmacopœias. They are less offensive than the ointments of sulphur, but they are certainly less sure. The same may be said of the fumigations of chlorine, of the *aqua chlorini*,<sup>a</sup> creasote,<sup>b</sup> and chloride of lime.<sup>c</sup>

<sup>a</sup> R.—Aquæ chlorin. f ℥j.  
Ol. olivar. f ℥j.—M.

<sup>b</sup> R.—Creasot. gtt. xxx.  
Aq. destillat. f ℥v.—M. or,  
R.—Creasot. gtt. xxx.  
Cerati  
Ol. amygdal. dulc. aa ℥j.—M.

<sup>c</sup> R.—Calcis chlorin. ℥ij.  
Adipis ℥viii.—M.

According to experiments made on the itch insect, by M. Albin Gras, a concentrated solution of the iodide of potassium kills it most speedily. It lives sixteen hours in vapour of burnt sulphur; three hours in water; two hours in olive oil; one hour in the acetate of lead; one hour in pulverized brimstone; three-quarters of an hour in limewater; twenty minutes in vinegar and spirit of wine; twelve minutes in a solution of sulphuret of potassium, and only from four to six minutes in a solution of the iodide of potassium. So far, therefore, as these experiments go, an ointment of iodide of potassium,<sup>a</sup> would appear to be the best application for the destruction of those insects, but it has not been as yet established what is the exact relation between the insect and scabies. That it is an accompaniment of scabies has been demonstrated, but whether it stand in the relation of cause or effect, or be a mere concomitant, like the *acarus folliculorum*, has not been determined.

<sup>a</sup> R.—Potass. iodid. ℥ss.  
Adipis ℥j.—M.

M. Cazenave speaks highly of a solution of iodine; and Mr. Ogier Ward affirms, that he cures the disease by a simple lotion of the iodide of potassium, a single washing with which, in some instances, completely eradicates it. To insure complete success, he applies the sulphur ointment at night, and the lotion during the day. It usually effects a cure in seven days. The lotion consists of one drachm of the iodide to eight, or sixteen fluidounces of water, according to the delicacy of the cutaneous surface. M. Aubé affirms, that one friction

with oil of turpentine will effect a perfect cure. All essential oils, especially those of anise and peppermint, are stated to possess antipsoric properties.

During the use of the different remedies, above recommended, vesicular and pustular eruptions are apt to occur, which may complicate the case, and give occasion to much cutaneous inflammation. Should this be the fact, the irritating applications must be laid aside, and emollient baths, topical or general, be prescribed. It may even be necessary to reduce the system somewhat by bloodletting, or cathartics, or both, but this can rarely be needed. The disease, when obstinate, would appear to have been rendered more tractable by this course.

The ectrotic or abortive method of treatment by cauterizing the vesicles has been occasionally employed; but it is obviously only admissible at the first appearance of the eruption. When the affection is extensive, it cannot be adopted, as it could not fail to occasion great inflammatory irritation in the surrounding parts, and render the disease more obstinate. After the disease has been strangled, the clothes should not be worn until they have been disinfected. Where the articles will admit of it, thorough washing with plenty of soft and yellow soap will be sufficient; or, in addition, they may be subjected, in an oven, to a high temperature; or to the fumes of sulphurous acid gas, produced by the ignition of a rag dipped in melted sulphur.

### III. BULLAR DISEASES OF THE SKIN.

SYNON. Bullæ; *Fr.* Maladies bulleuses; *Ger.* Blasen, Wasserblasen.

The blister, or elevation of the cuticle by sub-effused serum, that follows the application of boiling water to the surface, or of a plaster of Spanish flies, may be esteemed a type of the bullar affections of the skin,—so called, from *bulla*, a *bleb*. The affections classed under this division are but three—*Pemphigus*, *Rupia*, and *Anthracion*; the first of which will be considered under the head of Eruptive Fevers.

The blebs, characteristic of these diseases, vary in size from that of a pea to that of a hen's and even of a turkey's egg. They make their appearance, at times, without any perceptible redness of the surface; and are usually small when first discovered, but increase rapidly, until they acquire their destined dimensions. In the early stages, the fluid in their interior distends them, but they soon become flaccid, and, to appearance, half filled. When first secreted, the fluid is commonly limpid or slightly tinged with blood; but, subsequently, it becomes turbid and often purulent. When the blebs break, which they generally do speedily, their contents of course escape, and incrustations form, under which ulcerations of greater or less depth are apt to occur.

The parts of the body, on which they are most frequently seen, are the extremities, especially the lower; but they may appear on every part of the body.

#### I. RUPIA.

SYNON. Ephylysis rhyphia, Ulcus atonicum.

Rupia consists of an eruption of large flattish blebs, which are iso-

lated, and contain a fluid, at first serous, afterwards puriform, and often bloody; which rapidly concretes into crusts of greater or less thickness and prominence. At the base of these crusts and scabs are ulcers of variable depths. *Rupia* often resembles ecthyma: they have, indeed, been regarded as forms of the same disease. M. Gruby affirms, that he has discovered a cryptogamic plant in the bullæ of *rupia*: the fluid, when examined by M. Scherer had a yellowish tint, an acid reaction, a specific gravity of 1.018, and deposited a sediment composed probably of epidermic cells. On evaporation, it exhaled an odour of acetic acid, and deposited a quantity of very white albumen on being heated.

Varieties of *rupia* have been described, but they do not differ materially from each other;—for example, *rupia simplex* which—as its name imports—is the simplest form,—*rupia prominens*, which is distinguished by the greater size of the blebs, the greater thickness of the scab, and the depth of the ulceration,—and *rupia escharotica*, which commonly occurs in children of debilitated habits, on the loins, thighs, and lower extremities; the blebs being flattened, of an irregular shape, and surrounded by a dark areola; the fluid growing thick and black; and, when the blebs burst, the exposed surface presenting a painful excoriation, which soon degenerates into a foul ill-conditioned ulcer, secreting an unhealthy fetid ichor, and spreading both in depth and width.

*Rupia* generally attacks particularly the lower extremities, and sometimes the loins, nates, and other parts. It is not usually a dangerous affection. The sores, that succeed to the escharotic variety, are very difficult of management, but they generally yield to attention paid to the condition of the system that gives rise to them. The *rupia escharotica* of infants is little or not at all distinguishable from the bullopustular *syphilide* of children born with secondary symptoms.

**Treatment.**—As the eruption is connected with an impaired state of the system, it is important to remove this by the exhibition of tonics, such as the sulphate of quinia, the cold infusion of cinchona, (ʒiiss. ter. die,) or any of the ordinary vegetable tonics—as calumba, gentian, quassia, &c., in infusion.

R.—Quiniæ sulphat. gr. vj.  
 Acid. sulphuric. dilut. gtt. xv.  
 Aquæ fʒiv.—M.  
 Dose, one-third, three times a day.

The scabs ought in all cases to be softened off by poultices, and their fresh formation be prevented by some of the gently stimulating ointments, such as the *unguentum hydrargyri oxidi rubri*, the *unguentum hydrargyri nitratis*, reduced by the addition of lard; the ointment of creasote, or of the iodide or red iodide of mercury, as recommended under another head, (p. 32.) In very indolent cases, it is necessary to change the surface of the ulcers by the free application of solid nitrate of silver, or of nitric or muriatic acid; and in very indolent cases, it has even been found necessary to apply those acids in a state of concentration. In all the varieties, when there is much constitutional or local excitement, antiphlogistics internally, and emollient ap-

plications externally, may be advisable; but in almost all cases, it will be necessary to have recourse to tonics at some period; and, in many instances, the practitioner will find it necessary to employ them from the very first.

## 2. ANTHRACION.

SYNON. *Pustula maligna*, *Vesicula gangrænescens*, Malignant pustule, Malignant vesicle, Persian fire; *Fr.* *Pustule maligne*, Feu Persique, Mal-vat, Bouton malin, Puce maligne, *Ger.* Milzbrandcarbunkel.

The *pustule maligne*, as it is generally termed, is characterized by the appearance of a *bullæ* or bleb, filled with a reddish sero-sanguinolent fluid, under which a small lenticular induration is formed, which is, in a short time, surrounded by diffused inflammation of an erysipelato-phlegmonous character. The inflammation terminates in gangrene, which spreads rapidly from the centre to the circumference of the tumour. This definition applies generally to the affection; but, at times, a white line of demarcation checks its progress; at others, the cellular tissue rapidly becomes disorganized, and deep caverns form beneath the skin. The whole of the phenomena greatly resemble those produced by the bite of a venomous animal. First of all, there is considerable itching, succeeded, in a few hours, by the appearance of a small red spot like the bite of a bug, and soon afterwards, by the *bullæ*, which is small at first, and gradually augments in size. When gangrene strikes the central part, the inflammation extends to a considerable distance around,—the skin being red, tense, and shining, and the subcutaneous cellular tissue swollen, infiltrated, and often emphysematous.

The affection is usually accompanied by great constitutional disturbance, and, in its progress, the symptoms become markedly typhoid, or typhous in a malignant degree, and the patient often sinks, and dies within the first twenty-four hours of his malady. When it terminates favourably, the phenomena are the same as in cases of local gangrene in general; a line of separation occurs, and the constitutional symptoms improve. The disease is, of course, one of great danger; yet it may be, and often is, controlled by appropriate treatment.

**Causes.**—It has been the common belief, that anthracion occurs only from the contact of the matter of carbuncle of animals,—*carbunculus malignus*; *Ger.* *Milzbrandblatter*,—or of the offal, or of bodies of such as have died of the disease. It appears on parts of the body that are ordinarily or accidentally exposed. Thus, it is often seen on the face; never, according to M. Rochoux, on the scalp, and most commonly on the hands, forearm, arm, and neck. It seems that it may arise idiosyncratically in man.

**Treatment.**—The plan, thought to be most successful, is to make incisions through the gangrenous parts, so as to permit escharotics to come in contact with the sound textures, and induce in them a new action. A strong solution of nitrate of silver, (gr. xx.—xl. ad aquæ ʒj.), or the liquid muriate of antimony,—and diluted, or even strong, muriatic acid, may be applied by means of dossils of lint. By some, potassa has been advised, and by others, chloride of zinc, strewed, a

line thick, in a dry state, over the whole surface of the ulcer, the edges being surrounded with adhesive plaster, and a plaster placed over the chloride of zinc, with compresses, and an appropriate bandage. (See the author's *New Remedies*, 5th edit. p. 598, Philada. 1846.) These escharotics may be suffered to remain for a few hours, after which, turpentine dressings or warm poultices may be substituted. If, on the next day, there be no appearance of an extension of the disease, the soothing treatment may be pursued, or poultices, to which the *aqua chlorini* has been added, or an ointment of the same,<sup>a</sup> or a cataplasim,<sup>b</sup> or ointment of chloride of lime,<sup>c</sup> may be used.

<sup>a</sup> R.—Ceræ albæ ʒij.

Leni calore liquefact. adde  
Ol. oliv. q. s. ut fiat linimentum  
cui refrigerat. adde  
Aq. chlorin. f ʒiiss.—M.

<sup>b</sup> R.—Calcis chlorin.

Sodii chlorid. aa ʒss.  
Aq. destillat. Oss.  
Farinæ sem. lin. q. s. ut fiat cata-  
plasma.

<sup>c</sup> R.—Calcis chlorin. ʒj.  
Adipis ʒj.—M.

Should, however, the sloughs be surrounded by a hard swelling, and a diffuse erysipelatous circle of inflammation, indicating that the disease is on the increase, the stronger caustics may have to be repeated.

The internal management, and, indeed, the external, is essentially like that required in gangrenous stomatitis. Tonics are demanded, as soon as the malignancy of the affection is apparent; and opiates, in full doses, may be needed to allay the suffering.

The disease is fortunately but rarely seen.

#### IV. PUSTULAR AFFECTIONS OF THE SKIN.

SYNON. Pustulæ; *Fr.* Maladies pustuleuses; *Ger.* Pusteln, Blätterchen, Eiterbläschen, Eiterblättern, Eiterfinnen, Pustulösen Hautkrankheiten.

Some of the most interesting diseases of the skin belong to this class. They consist in small collections of purulent matter, which form in the cutis vera, or between the cutis vera and the cuticle. The affections that fall under it, or that are esteemed to be pustular in their elementary forms, are *Ecthyma*, *Impetigo*, *Acne*, *Mentagra*, *Porrigo*, *Variola*, *Varioloid*, *Vaccinia*, and *Equinia*, the majority of which are chronic in their character: variola, however, is one of the most formidable diseases to which mankind are subject—the constitutional disturbance being generally considerable, and, at times, overwhelming. Many of them, although not acute, are so loathsome as to render existence burdensome.

Pustules occasionally terminate by the absorption of the purulent matter; at other times, crusts or scabs are formed, under which ulcerations take place; and, at others, again, they give occasion to indurations, called frequently, but unhappily, *tubercles*, inasmuch as they, in no respect, resemble the heterologous formations to which the term is now generally appropriated.

Discrepancy has existed among dermatologists as to whether certain affections should be considered pustular or vesicular. Messrs. Willan and Bateman, for example, class scabies amongst the former. The difference in these elementary forms of cutaneous diseases consists in



the characters they present when first seen. The pustule is filled with consistent yellow pus, almost from the moment it appears; in the vesicle, the purulent matter is an after product of the continuing inflammation. The products of the two elementary forms of inflammation also differ materially from each other; the incrustations of vesicles being thin and flimsy, and of a pale colour; those of pustules thicker, more solid, and generally of darker tints.

Of the diseases that belong to this division,—*variola*, *varioloid*, *vaccinia*, and *equinia* will be considered under the head of ERUPTIVE FEVERS.

### 1. ECTHYMA.

SYNON. Ecpyesis ecthyma, Phlysis ecthyma, Phlyzacia, Agria, Scabies fera, Furuncul atonici, Papulous Scall; *Fr.* Dartre crustacée, *D.* fongueuse; *Ger.* Blatternflechte, Eiterpusteln.

Ecthyma is characterized by an eruption of large round pustules, which are rarely numerous and distinct from each other; are seated upon an inflamed, hard base, and most commonly give occasion to the formation of brownish scabs or crusts, of greater or less thickness. These leave after them reddish stains, and, occasionally, slight cicatrices. It is generally unattended with fever, and is incapable of being communicated by contagion. It may occur at all ages, and appears often to be induced in children by want of cleanliness. The author has frequently seen it caused by the irritation of the urine, where the child has been in the habit of wetting the bed, or where its diapers have been kept on too long. A variety of the disease is induced by friction with the ointment of tartarized antimony.

Ecthyma may be acute or chronic. The former generally runs its course in from one to two weeks: the latter may continue for several months,—fresh and fresh eruptions of pustules taking place, which pass slowly through their different stages.

In children of weakly constitutions, badly fed, and especially when convalescing from bowel complaints, with distended abdomen, a variety of ecthyma—*E. infantile*—not unfrequently occurs. In this, the size of the pustules is very irregular; the larger sometimes suppurating, and being followed by ulceration; but frequently, after threatening suppuration, they slowly disappear by cuticular desquamation. A variety of the disease—*ecthyma cachecticum*—resembles rupia greatly, and attacks chiefly the legs of old and cachectic persons, who have lived intemperately. Ecthyma and rupia have, indeed—as elsewhere remarked—been esteemed varieties of the same disease.

**Treatment.**—In an ordinary mild case of ecthyma, little more is required than rest, with tepid bathing, and the use of gentle cathartics. When the affection, on the other hand, is chronic, and occurs in debilitated or cachectic subjects, it may be necessary to put the patient upon the vegetable or mineral tonics; or the preparations of iodine, especially the iodide of iron, (*liq. ferri. iodid. gtt. x., ter die, ex syrupo.*) with a proper attention to diet. As the general health improves, the eruption usually disappears; and this desirable result

is favoured by the use of tepid or warm baths, especially of the sulphurous kind.

Whilst the pustules are in an irritable state, emollient applications are all that can be employed; but the ulcers are, at times, exceedingly obstinate, and require to be touched with sulphate of copper, solid nitrate of silver, or a solution of the same.

R.—Argent. nitrat. gr. iv.—viiij.  
Aquæ destillat. fʒj.—M.

## 2. IMPETIGO.

SYNON. Ecpyesis impetigo, Phlysis impetigo, Running tetter, Crusted tetter, Pustular or Humid tetter, Scall, Cowrap; Fr. Dartre crustacée, Lèpre humide, Melitagre; Ger. Feuchten nässanden Grind, Pustelflechte.

The term *impetigo* has been variously employed from Hippocrates downwards. Even amongst the moderns, it has been used so extensively as to include all chronic cutaneous diseases, in contradistinction to the acute; but, by most writers on diseases of the skin, its signification has been narrowed down, so as to include a pustular affection having special characters. It is characterized by the formation of a number of minute pustules, which may be distinct or clustered together,—breaking, and the fluid forming yellowish, thick, rough, prominent incrustations. These pustules are called by some *Psudracia*. When the pustules are collected in clusters, so as to form circumscribed patches of various figure and extent, they constitute *Impetigo figurata*, which occurs most frequently on the face. The patches are usually smaller and more circular on the upper extremities; and larger, oval and irregular on the lower. When, instead of being clustered together, the pustules are dispersed without any regular order, it is termed *Impetigo sparsa*.

*Impetigo figurata*, *Porrigo lupinosa*, *P. larvalis*, *Tinea granulata*, *T. mucosa*, *Crusta lactea*, *Mentagra infantum*, *Teigne*, *Dartre crustacée flavescente*, occurs, as has been already observed, more frequently on the face, and especially on the cheeks of children during dentition; and is not necessarily preceded by constitutional disturbance. It commences, generally, with one or more distinct red patches, on which numerous small yellow pustules, nearly confluent, and attended with much itching, appear, and when the eruption is severe, a sort of erysipelatous inflammation precedes and accompanies it. The pustules burst within three or four days, and discharge a quantity of purulent fluid, which quickly dries into semitransparent, and very friable incrustations, bearing considerable resemblance to a layer of concrete honey. The discharge continues to ooze from under the scab, which grows thicker; and, when detached, exhibits a red inflamed surface, studded with numerous minute pores, from which the discharge proceeds. Around the clusters, several distinct pustules may generally be seen.

In the incrustated state, described above, the eruption usually remains stationary for two, three, or four weeks, when the secretion diminishes; and the crusts fall off gradually and irregularly, leaving a red, shining, and very tender surface, which continues for a long time to exhibit

traces of the disease, although it rarely or never leaves any permanent cicatrix, and is ready, on the slightest irritation, to recur. When the disease appears, however, on the face, it is very apt to assume the chronic type, owing to fresh and fresh eruptions presenting themselves. In such case, deep chaps and ulcerations of the skin may occur, yet still permanent cicatrices do not follow.

The variety of impetigo figurata, which appears on the face, has been termed, also, *Crusta lactea*, *C. L. Infantum*, *Achores in Facie*, *Lactumina*, *Tinea faciei*, *T. lactea*, *Milk scall*; Fr. *Croûtes laiteuses*, *Teigne muqueuse*, *Gourme*; Ger. *Milchborke*, *Milchschorf*, *Milchgrind*, *Freisam*. It has also been called *Tinea muciflua*, *T. mucosa*, *Impetigo larvalis* and *Porrigo larvalis*;—the two last names from its occasionally covering the face as with a mask. These follow the same course as in impetigo figurata in general.

When impetigo attacks the hairy scalp, the pustules are still crowded together, but not so distinctly collected into clusters as in common impetigo figurata of the face: they are of a whitish or pale yellow colour, and each seems traversed in its centre by a hair. They soon burst spontaneously, or owing to the scratching induced by the severe itching; and pour out freely a semi-opaque, pale, straw-coloured fluid, which moistens the hair, and concretes into small ragged masses, very like the granules of tapioca or bits of candied sugar. This variety of impetigo has been termed *Impetigo granulata*, *Tinea granulata*; Fr. *Teigne granulée*, owing to the granular form of the concretions; and *Porrigo favosa* by others. In it the inflammation extends, at times, to the subcutaneous cellular membrane, giving occasion to small and yet very painful, abscesses, which generally burst externally, but are sometimes absorbed. The lymphatic ganglions of the neck also swell, as in other painful diseases of the integuments of the head. From the matted hair, a discharge is constantly dripping, which has an extremely disagreeable odour, not unlike that of rancid butter, or spoiled cheese; but this appears to be partly—if not wholly—owing to a want of attention to cleanliness. Under the same influences, the matted hair may be full of pediculi.

*Impetigo sparsa* is more apt to attack the lower extremities, and it is accompanied with intolerable itching. The pustules generally make their appearance on the insteps, ankles and especially the outer parts of the legs, and run their course in much the same manner as the impetigo figurata. Fresh and fresh eruptions of pustules, however, present themselves, and invade the leg upwards, until, ultimately, it is encased in one continuous, rough, thick, and adherent yellowish-brown incrustation, similar in appearance to the bark of a tree, and constituting *Impetigo scabida*. The disease is occasionally very obstinate,—frequently continuing for months, and even years, in spite of every attention; and implicating, at times, the derma, so as to give rise to intractable ulcers; and spreading even to the ends of the fingers and toes, so as to interfere with the nutrition of the nails, and to cause them to be distorted or lost.

**Treatment.**—When impetigo appears as an acute affection, it must be treated by antiphlogistic and soothing remedies. In the milder

forms, the part may be washed with warm milk and water, or flax-seed tea; and mild ointments—as the *unguentum zinci*—be applied. In severer cases, where there is more inflammatory irritation, it may be advisable to take away some blood, and to prescribe saline cathartics. The scabs must be prevented from forming, as far as is practicable, by tepid ablution of the kind prescribed above, followed by the application of the zinc ointment, or of any other unirritating, oleaginous preparation. Should the disease be seated in the scalp, the hair should be cut close or shaved off, and the greatest attention be paid to cleanliness. To favour the removal of the matted hair, an emollient cataplasm may be applied, so as to soften the concreted humour. After the inflammatory irritation has been subdued, gently stimulating ointments may be used,—as the *unguentum hydrargyri nitratis* or the *unguentum creasoti*, properly reduced. In some troublesome affections of the skin, especially of the hands, conjoining the characters of impetigo with erysipelatous redness and swelling, and inducing the most intense suffering, the textures were speedily restored to a healthy condition by the external use of the codliver oil—*oleum jecoris aselli*—after all other remedies have been tried in vain. It need scarcely be said, that the general health must always be attended to, as most of these cutaneous affections are largely connected therewith.

When impetigo is decidedly chronic, the habitual use of drinks, acidulated with the mineral acids—as the nitric or sulphuric—has been advised, with prolonged immersion in the tepid bath, or in one that is alkaline. The use of the stimulating ointments, recommended above, may also be prescribed, or a lotion of the hydrocyanic acid.

R.—Acid. hydrocyanic. fʒiv.  
Alcohol. fʒj.  
Aquæ destillat. fʒxss.—M.

This lotion has completely allayed the distressing and intolerable itching and tingling, after other external applications and the internal use of anodynes had been of no avail: the discharge was diminished, and rendered milder by it. A solution of creasote has, likewise, been used successfully in old impetigo. The cure, in one case, was accomplished in about eight weeks.

R.—Creasot. fʒss.  
Aquæ destillat. fʒv.—M.

At first, the application caused so much heat and inflammation, that in eight days it was obliged to be discontinued, and afterwards it was alternated with fomentations of warm water, from day to day, until the cure was completed. Should these means not prove successful, the incrustations may be softened and washed away, either by the warm or the vapour bath, and the affected parts be touched with dilute muriatic, sulphuric or nitric acid. The proportion of one drachm to the ounce of water has been advised, but this must generally be too strong. It may be applied by means of a feather; and if it should prove too irritating, the acid may be washed off by pouring cold water over the part. The sulphur fume-bath has, likewise, proved a valuable agent in many obstinate cases.

Along with these topical applications must be conjoined the use of internal agents, which are adapted for modifying the function of nutrition. The preparations of arsenic are excellent in this respect. Fowler's solution, (*liq. arsenit. potass. grt. viij., ter die, ex aquâ;*) or Pearson's solution,<sup>a</sup> or the arseniate of ammonia,<sup>b</sup> or the iodide of arsenic, (*gr. ʒss., ter die,*) may also be given; but it is requisite to persevere in the use of those remedies for a long time, where the disease has been of considerable duration.

<sup>a</sup> R.—Sodæ arseniat. gr. j.  
Aquæ f ʒj.—M.

<sup>b</sup> R.—Ammon. arseniat. gr. j.  
Aquæ destillat. f ʒj.—M.

Dose, ten to twenty drops, three times a day.

Dose, twenty to twenty-five drops, three times a day.

### 3. ACNE.

SYNON. Varus, Ionthus, Ionthus varus, Acna, Psydracia acne, Stone pock; *Fr.* Dartre pustuleuse disseminée; *Ger.* Hautfinne.

This cutaneous affection is characterized by small, more or less red and inflamed pustules, which penetrate the tissue of the skin to a greater or less depth, and proceed but slowly to suppuration. Many varieties have been pointed out by dermatologists.—1. *Acne simplex*, which is seated on the forehead, face and shoulders,—the pustules appearing in the form of small, red and hard elevations, with an inflamed base, in which pus forms slowly, which is thin, and usually mixed with a thick sebaceous matter. These dry off and form small almost branny scales, which, on falling off, leave a dark red, raised mark, that disappears slowly. When the pustules are mixed with a number of black circular points, which are the orifices of follicles filled with sebaceous matter, and are frequently converted into pustules, we have *Acne punctata*, *Punctæ mucosæ*, *Ionthus varus punctatus*, *Acne sebacea*, or *Maggot pimple*, commonly regarded as *grubs* or *worms in the skin*; but really owing to an accumulation of sebaceous matter in the follicles, which assumes a vermiform appearance when forced through the narrow aperture of the follicle. It has been found, indeed, that these follicles are the habitat of a parasitic insect—the *Acarus Folliculorum*, *A. Comedonum*, *Demodex folliculorum*, *Simonea folliculorum*, which may exist alone, or in clusters of several in a single follicle. In the perfectly healthy condition of the follicles, they are few in number: but, when sebaceous matter, which serves them for aliment, is allowed to accumulate, they may abound. The insect is described by Messrs. Simon, E. Wilson, and Vogel. The animalcule varies from the twelfth to the eighth of a line in length, and from the thirtieth to the fiftieth of a line in breadth. It is at times solitary; at others ten or more are found in a single follicle. 2. *Acne indurata* is characterized by larger pustules, which mature more slowly, and have a central core formed by the inflammation of a sebaceous follicle, and on this account both acne and mentagra have been classed by Mr. Dendy, under *Folliculosa*, or “diseased secretion of the follicles.” After having existed for two or three weeks, the tops of the pustules become yellow, break, and suffer a yellowish pus to escape, and, by pressure, a kind of core is often forced out, which has been supposed to consist of the follicle itself, or at least of a sort of

false membrane, which has taken its shape, and which represents a cyst containing a sebaceous matter. It appears generally on the face, and is at times to a very trifling extent; but at others is more severe, so that the face is covered with livid red indurated tumours: occasionally, also, it attacks the back, where it leaves small oblong and indelible cicatrices. (*Schedel.*) 3. *Acne rosacea*, *Ionthus corymbifer*, *Gutta rosea*, *Bacchia*, *B. rosacea*, *Coppernose*; Fr. *Dartre pustuleuse couperose*, *Couperose*; Ger. *Kupferhandel*, *Finnen in Gesichte*, is confined almost exclusively to the face, and often to the nose and cheeks adjoining. It presents different degrees. At times, it consists almost entirely of a red colour of the skin, which is more or less diffused and intense, accompanied by the appearance, here and there, of a few pimples, and followed by a slight branny desquamation. This redness by degrees becomes habitual, and is increased after taking stimuli. At other times, the surface of the face is rugous, and full of small projections; the veins of the nose enlarging, and being accompanied by deeper-seated inflammation. Yellow pustules are frequently scattered over the red variegated surface, and the features undergo considerable change. The nose especially becomes tumid; and, at times, is double or triple its ordinary size; and more or less considerable tumours, of a rugous and livid character, form, especially on the *alæ nasi*, which give occasion to great deformity. The last variety is so common a sequence of intemperate habits, that the terms *Grog-roses*, *Grog-blossoms*, *Bottle-nose*, Ger. *Weinblattern*, &c., have been applied to it. It occurs, however, at times in those who are abstemious.

The causes of acne are obscure. The two forms occur generally about the period of puberty; but—as has been properly remarked—what connexion there can be betwixt the establishment of certain new capacities in the economy and an inflammatory affection of the sebaceous follicles of the skin, of an unpleasant nature, is not very evident.

**Treatment.**—Acne simplex requires little treatment. It is an affection of youth in both sexes, and generally disappears at the age of virility. Acne indurata is a more severe and rebellious variety; and acne rosacea is always obstinate, and frequently incurable. In all forms of the disease, it is advisable, perhaps, to puncture the pustules so as to prevent their breaking of themselves, and to allow a free passage for the sebaceous matters, without injuring or destroying the follicular structure. This can be done by the point of a lancet, after which gentle pressure may be applied to force out the hard sebaceous matter.

In cases of extensive eruptions of acne simplex and acne indurata, especially if the patient be of vigorous habit, restriction from animal diet, occasional cathartics, and even bloodletting, may be advisable. In some of these obstinate cases, the author has found great benefit, as in other chronic cutaneous affections, from a thorough change of diet, and especially from putting the patient on the use of saccharine matter between the meals, so as to modify the condition of the chyle, and, through it, that of the blood, and of the tissues in which the blood circulates. An ounce and a half of simple syrup may be administered with this view, about three hours after each meal. The quantity of

animal food need not be materially diminished, and certainly it ought not to be wholly withdrawn, for fear that a scorbutic condition might be induced, as is apt to be the case when a person, who has been accustomed to both animal and vegetable food, is restricted to either one or the other exclusively. With the syrup may be associated the iodide, or the ioduretted iodide of potassium.

R.—Liq. iodini comp. gtt. x.—xx. ex  
syrupi f 3ss. ter die sumend.

By a perseverance in this system for two or three months, gradually increasing the quantity of iodine, the author has succeeded in removing some very rebellious cases.

The local applications in acne simplex, whilst there is much irritation, should be wholly emollient—such as almond emulsion, infusion of slippery elm, flaxseed tea, decoction of bran, warm milk and water, &c.; but, where the affection is obstinate, lotions of a more stimulating character may be advisable,—as alkaline washes;<sup>a</sup> or lavender or Florida water applied at night before retiring to rest.

<sup>a</sup> R.—Potass. carb. ʒj.—ʒss.  
Aquæ f 3j.—M.

Some advise, also, the corrosive chloride of mercury;<sup>a</sup> and the sulphurous waters have been found serviceable.<sup>b</sup>

<sup>a</sup> R.—Alcohol. dil.  
Aq. rosæ aa f 3ij.  
Hydrarg. chlorid. corrosiv. gr.  
j.—ij.—M.

<sup>b</sup> R.—Potass. sulphur. ʒss.  
Aquæ f 3iv.—M.

In acne indurata, the same general plan of treatment is necessary. It has been recommended, in addition, to employ general vapour baths, the vapour douche, and the cold sulphurous water douche. It is in acne indurata especially, that the ectrotic practice of opening the pustules early is advisable. It often prevents the formation of unseemly scars. The iodide of sulphur ointment<sup>a</sup> may be rubbed over the indurations, night and morning, with great advantage.

<sup>a</sup> R.—Sulphur. iodid. ʒj.—ʒss.  
Adipis ʒj.—M.

In very obstinate cases, it has even been advised to rub solid nitrate of silver over the parts, to brush them over with one of the concentrated mineral acids, or to apply a blister when the eruption is not extensive,—with the view of changing the morbid action of the skin; but before these potent remedies are tried—if prudent to try them at all—the less hazardous should be first prescribed.

In regard to acne rosacea, especial attention should be paid to diet. Everything stimulating should be strictly proscribed. If, however, the disease have been induced by habitual indulgence in spirituous or vinous liquors, it may not be advisable to withdraw them altogether. Attention to the state of the general system is here particularly important. The eruption itself must be treated in the same manner as recommended for the other varieties. The syrup of iodine internally, and the ointment of iodide of sulphur externally, have, at times, done wonders. A lotion of hydrocyanic acid,<sup>a</sup> in combination with small

doses of corrosive chloride of mercury, (gr.  $\frac{1}{12}$ — $\frac{1}{8}$  ter die,) has been found highly beneficial.

<sup>a</sup> R.—Acid. hydrocyan. fʒiv.  
Alcohol. fʒj.  
Aquæ destillat. fʒxss.—M.

When the circumstances of the patient will admit of it, travelling air and exercise, with the revellent action of thorough mutation of the different influences surrounding him, will be important, and where this is practicable, a resort to some sulphurous water, with the internal use of the same, and the application of the *marc* to the affected parts, may effect a cure. It would not seem, that the use of the general sulphurous bath has in all cases been beneficial.

When the eruption has disappeared, it has been recommended, as a precautionary measure against the return of the disease, to use a weak spirituous lotion, or a wash of sulphuret of potassium, to the parts affected, for weeks and even months after all traces of the disease have disappeared.

#### 4. MENTAGRA.

SYNON. Sycosis, Varus Mentagra, Phyma Sycosis, Chinwelk; *Fr.* Mentagre, Dartre pustuleuse mentagre; *Ger.* Kinnaussatz, Kinnflechten.

This affection scarcely requires to be considered separately from acne. It appears to be produced by obstruction of the follicles of the skin, and consequent inflammation occurring in parts covered with hair; and its principal seats are the chin, in men—*Sycosis menti*; and the head in both sexes, particularly the margin of the hairy scalp, in the occiput, around the forehead and temples, and near the external ear, which is also liable to be included in the disease—*Sycosis capilitii*. It is a very troublesome affection, as all eruptions are that implicate the hair.

M. Gruby, of Vienna, a few years ago, announced the existence of a new cryptogamic plant in mentagra, which is found at the roots of the hairs of the beard, and around that portion, which is contained in the hair follicle. By the transmission of the seeds of this plant, the disease is rendered contagious, and he proposes for it the name *mentagrophyte*. The disease, according to M. Gruby, is limited to the hairy part of the face; but is most frequently seen on the chin, upper lip, and cheeks,—covering the parts with white, grayish, and yellowish scales, which are slightly raised at the middle, have angular borders, and are pierced at all points by hairs. Examination with the microscope shows, that the scales are composed of epidermic cells; but the whole of the dermic portion of the hair is surrounded by cryptogamic formations, which form a vegetable sheath around it, in such manner, that the hair implanted in the sheath, may be likened to the finger surrounded by a glove. These cryptogamia are never seen to rise above the surface of the epidermis; they originate in the matrix of the hair, and in the cells of which the follicle is composed, and they ascend so as to surround all that portion of the hair which is included within the derma. They present everywhere a prodigious number of *sporules*, which are adherent, on the one side, to the inter-



nal surface of the follicle, and on the other to the cylinder of the hair. This disease of the skin M. Gruby regards as of purely vegetable nature. It may be so; but it requires confirmation.

**Treatment.**—This does not differ from that recommended in acne. It may require, like it, to be treated both internally and externally. When it is seated on the chin, the use of the razor has to be laid aside, and the beard clipped close; and in severe cases, it is advised not only to employ the point of the lancet as in acne, but the forceps, to extract any hairs which may seem to act as irritants.

### 5. PORRIGO.

SYNON. Favus, Tinea; Fr. Les Teignes; Ger. Erbgrind.

It has been properly remarked, that the difficulties encountered in the study of the pustular diseases of the hairy scalp have been greatly increased by the descriptions given by Willan and Bateman, under the title of porrigo and porriginous eruptions. They have classed together eruptions under this term, some of which are contagious, and others non-contagious; whilst they have described porrigo as a contagious pustule. It would appear, that but two,—the *Porrigo lupinosa*, and *P. scutulata* of those gentlemen,—are contagious; the others,—as the *P. favosa*, *P. larvalis*, *P. decalvans*, and *P. furfurans*, being merely impetiginous or squamous affections of the hairy scalp. The two contagious affections will chiefly require attention here.

1. *Porrigo favosa*, (Bielt,) *Tinea Favus*, *F. dispersus*, *Porrigo lupinosa*, *Tinea favosa*, *T. lupina*, *T. rugosa*, *Ecpyesis porrigo lupinosa*, *Scabies capitis*; Fr. *Teigne*, *Porrigine*, *Teigne faveuse*; Ger. *Favöse Kopfgrind*, *F. Wachsgrind*, is so called in consequence of the remarkable yellow honey-colour of the incrustations. It is characterized by the eruption of small, flat, yellow, umbilicated, deeply-seated pustules, distinct or clustered, which soon concrete, and form bright yellow, umbilicated incrustations. These incrustations are often traversed by hairs. They increase slowly in size, and the depressions in them become more and more apparent, so that they seem as if forced into the very tissue of the skin. If attempts be made to remove the scab, pain is excited, and the parts beneath bleed, and appear red and excoriated. The bulbs of the hair inflame; and if the disease persist for any length of time, the hair becomes thin, deprived of its colour, lanuginous, and falls out; after which the surface of the skin may remain smooth and shining, so as to indicate the primitive seat of the eruption. The itching is commonly severe, and not unfrequently, pediculi breed under the incrustations, and add materially to it.

It has been recently affirmed, that the yellow substance, which constitutes the crusts of this affection, is an organic growth of simple structure, bearing a marked resemblance to the vegetable bodies, collectively called *mould*. They have been examined by Remak, Schönlein, Fuchs and Langenbeck, Lebert, Bennett, Busk, and Gruby, the last of whom states, that the crusts are made up of aggregated *mycodermes*. M. Rayer regards them to be invariably secondary productions. M. Remak asserts, that he has succeeded in transmitting porrigo favosa by inoculation with the fungi; but M. Gruby, Dr. J. H. Bennett,

and M. Vogel have failed. The last observer is persuaded, that in tinea the exudation from the vessels of the cutis, which he esteems scrofulous, is the primary cause and essential condition, as it prepares the bed on which the transferred germs are developed; and these germs may gain access, he thinks, to the inferior most recent layers of the epidermis, by means of fissures in it, occasioned by the exudation; so that it might seem as if they were engendered beneath the epidermis. It is very questionable, however, whether these myco-dermes be really vegetable; and it is certainly far more probable, that they are very simple animal growths; and this view is confirmed by the chemical analysis made of them by M. Thénard, who found them composed of 70 per cent. of albumen, 17 of gelatin, 5 of phosphate of lime, and 8 of water and loss.

When the disease has been arrested, the hair grows again,—thin and woolly at first, and is generally weaker and lighter in colour than before; although, in some instances, it has the same appearances as the hair on the sound portions of the scalp.

As in other cases of irritation of the scalp, the lymphatic ganglions in the cervical region are apt to inflame, and abscesses may even form. The humour, secreted from the affected parts, and which concretes, exhales a peculiar odour, which some have compared to that of the leek, whence the name *porrigo*, (*porrum*, “a leek;”) and others to that of mice.

*Porrigo favosa* appears, occasionally, on other regions besides the scalp; but it is not so loathsome or intractable under such circumstances. In the opinion of almost all pathologists, it is communicable, and is supposed to spread amongst children of the same family, by their using the same comb, hair-brush, towels, night-caps, &c.; yet it is affirmed, that attempts to inoculate the disease directly generally fail; and its contagious character has been denied. It may attack persons of all ages; but children between six and ten appear to be most liable to it. Where it arises sporadically, it is very difficult to trace the influences that have given occasion to it. Neglect of proper cleanliness; insufficient or improper food; residence in low, damp situations; a scrofulous habit of body, &c., have been enumerated as its occasional causes; but it must be admitted, that the subject is sufficiently obscure. The author has met with a few cases in single members of different respectable families which did not spread farther; and no light could be thrown upon their origin.

There is generally not much difficulty in discriminating this disease. No other eruption of the scalp, except the next variety—*Porrigo scutulata*—is characterized by minute yellow pustules, whose contents concrete, almost as soon as they are visible, into little cup-shaped or umbilicated scabs.

**Treatment.**—*Porrigo favosa* is one of the most rebellious affections that can fall under the care of the practitioner; and rarely or never yields, unless the most sedulous exertions are made use of. The very first step to be taken, in all cases, is to soften the incrustations, so as to enable the appropriate remedies to come in contact with the morbid surface; and the best application for this purpose is a common emol-

lient cataplasm; after which, the matter may be still further softened, if necessary, and washed away by warm milk and water, or soap and water. Castile soap is best adapted for this purpose;—the yellow or turpentine soap, and the soft soap, being too irritating. In this way, by alternately poulticing and washing, all the incrustations may be got rid of in a few days. The hair must then be cut short with scissors; and the dead hairs be removed—if they do not fall off—by means of the forceps; but no violence should be employed,—least of all, the old depilatory method, which consisted in applying a pitch plaster to the head, and then forcibly tearing off the plaster and the hair along with it. The irritation and pain, caused by this barbarous treatment, was, of course, excessive. When the poultices have softened the incrustations, they may be left off, and an alkaline ointment<sup>a</sup> be gently rubbed over the parts night and morning; having previously bathed them with a weak alkaline wash,<sup>b</sup> either tepid or warm.

<sup>a</sup> R.—Potass. carb. ℥j.  
Adipis ℥j.—M.

<sup>b</sup> R.—Potass. vel Sodæ carb. ℥j.—℥ij.  
Aquæ Oj.—M.

These alkaline applications would appear to be depilatory.

When the irritation has been subdued by this treatment, gentle excitants will commonly be needed to restore the skin to its healthy condition; and when it has persisted for a great length of time, the most powerful applications of an excitant character may be demanded.

The alkaline methods of treatment, advised above, appear to have strong testimony in their favour, but should they lose their influence, a wash of the sulphuret of potassium may be substituted.

R.—Potass. sulphuret. ℥ij.  
Aquæ f℥viii.—M.

Weak solutions of chlorinated lime,<sup>a</sup> or of chlorinated soda,<sup>b</sup> or of creasote,<sup>c</sup> may also be employed.

<sup>a</sup> R.—Calcis chlorin. ℥ss.  
Aquæ Oj.—M.

<sup>b</sup> R.—Liquor. sodæ chlorinatæ, p. j.  
Aquæ p. xx.—M.

<sup>c</sup> R.—Creasot. ℥ss.  
Aquæ Oj.—M.

A saturated solution of creasote has been advised by Dr. Copland, but the author has found the formula just given sufficiently strong, and when the quantity of creasote has been increased, so much inflammatory irritation has, at times, been induced, that it had to be discontinued for a time. In some cases, tincture of iodine, or solutions of sulphate of zinc,<sup>a</sup> or of sulphate of copper,<sup>b</sup> or of nitrate of silver,<sup>c</sup> have been of great service; and where the pustules have been few, and scattered here and there, good effects would seem to have resulted from the use of the solid nitrate of silver applied over the affected surfaces, after the incrustations had been removed by cataplasms and washes.

<sup>a</sup> R.—Zinci sulphat. gr. x.—xx.  
Aquæ f℥j.—M.

<sup>b</sup> R.—Cupri sulph. gr. v.—x.  
Aquæ f℥j.—M.

<sup>c</sup> R.—Argent. nitrat. gr. v.—xx.  
Aquæ f℥j.—M.

A multitude of various ointments have been employed; but they have been regarded by some as inferior to the alkaline unguent before recommended. The citrine ointment, either unmodified, or reduced,<sup>a</sup>

has been advised, and may be advantageously alternated with the alkaline ointment.

<sup>a</sup> R.—Ung. hydrarg. nitrat. p. j.  
Adipis p. ij.—iv.—M.

The author's experience with the ointment of iodide of sulphur<sup>a</sup> is similar to that of M. Biett. It has cured some obstinate cases. One of the recommendations, brought forward in its favour, is—that it prevents the formation of fresh pustules, and causes the hair to be reproduced of the same strength and colour as before.

<sup>a</sup> R.—Sulphur. ioidid. ℥ss.—℥ij.  
Adipis seu. Ol. oliv. ℥j.—M.

A liniment of chlorinated lime,<sup>a</sup> has been applied successfully by means of a camel's hair pencil, as well as an ointment of sesqui-iodide of carbon;<sup>b</sup> a liniment of chlorine water;<sup>c</sup> an ointment of creasote;<sup>d</sup> or of soot;<sup>e</sup> or of iodine.<sup>f</sup>

<sup>a</sup> R.—Calcis. chlorin. ℥ss.  
Cere albæ ℥j.  
Ol. amygdal. seu oliv. ℥ij.—M.  
<sup>b</sup> R.—Carbon. sesqui-iodid. ℥ss.  
Cerat. simpl. ℥vj.—M.  
<sup>c</sup> R.—Aq. chlorin. f ℥j.  
Ol. oliv. f ℥j.—M.

<sup>d</sup> R.—Creasot. ℥ss.  
Adipis ℥j.—M.  
<sup>e</sup> R.—Fulig. ℥jss.  
Zinci sulphat. ℥vj.  
Adipis ℥iv.—M.  
<sup>f</sup> R.—Iodin. gr. iij.  
Adipis ℥ij.—M.

Codliver oil—*Oleum jecoris aselli*—which is presumed to contain iodine—is said to have proved serviceable, applied externally. . Certain of these agents may be used in alternation; and they must be applied at least six or seven times in the course of the day; premising the use of soap and water to soften the incrustations. It is a cardinal point, indeed, not to permit their formation, and if due care be bestowed on this point, almost any plan of treatment will succeed in the course of two or three months; whilst all will fail, if this be neglected.

In very obstinate cases, cauterization of the morbid surfaces with some dilute acid, passed over the part by means of a feather, is said to have effected a cure. Water must be poured over the part to prevent the action of the caustic from being too deep. Creasote is said to have succeeded, where other means had failed; the diseased part being touched with a small hair-pencil dipped in it, and the ointment of creasote, advised above, being applied over them.

Recently, Dr. A. L. Wigan has strongly recommended Beaufoy's *concentrated* acetic acid—pyroligneous acid, as it is called, although no longer made from wood. As a preliminary measure, he uses the acid diluted with three times its weight of water, on the application of which a number of spots that looked perfectly healthy become red patches. With a piece of fine sponge, either tied to the end of a stick or held in a pair of silver sugar-tongs, he imbues each spot thoroughly with the concentrated acid for the space of three or four minutes; and—to use his own language—“the business is finished.” M. Devergie has used, at the Hôpital St. Louis, of Paris, a solution of nitrate of mercury in nitric acid, which he applies by means of a camel's hair pencil. The crusts speedily become of a reddish-yellow colour, and fall off at the

end of five days, leaving the scalp sound. The *caustic iodine solution*, (*New Remedies*, 5th edit., p. 520, Philad. 1846,) he found equally successful in two cases. The disease exhibited no disposition to return after either mode of treatment.

These are, perhaps, the best of the various topical applications, that have been recommended in this obstinate affection. Constitutional remedies seem to be of little advantage; but attention must always be paid to the general health. An oilskin cap, worn over the head, will tend to prevent the formation of scabs, after the fatty preparations have been employed; but it requires to be repeatedly changed, otherwise more harm than benefit might accrue.

2. *Porrigo scutulata*, *P. scutellata*, *Favus confertus*, *Tinea capitis vera*, *T. annularis*, *T. maligna*, *T. hereditaria*, *Ringworm of the scalp*; Fr. *Teigne annulaire*, *T. en anneau*, *T. nummulaire*; Ger. *Wahre Kopfgrind*, *bösartige Kopfgrind*, *Erbgrind*, is rarely met with in other regions of the body than the forehead and neck. It presents itself in the form of one or more circular red patches, on which numerous minute, deep-seated yellow pustules appear. Like the pustules of *porrigo favosa*, they are usually traversed by a hair, and the eruption is attended with intense itching. The fluid of the pustules usually soon dries up into minute cupped or umbilicated scabs, which adhere by the edges, so as to form a continuous incrustation, of the shape and dimensions of the original patch. Eruptions of pustules subsequently take place on a larger and larger outline, whilst the incrustations fall off from the central parts, and the integument becomes dry, and subject to a constant desquamation. The nutrition of the hair is injured within the circular patches, so that they are all but bald. The spots or patches are usually covered by small dry scales, or a white bran-like powder. If this powder be examined with the microscope, it appears to consist of minute cryptogamous plants. The hairs that have fallen off appear to be encrusted on all sides with these growths, so as to form a vegetable sheath, which invests them from their point of emergence from the skin to the extent of three or four millimètres (in. .117 to in. .146). This plant M. Gruby calls *Microsporon Audouini*, in compliment to M. Audouin, who has done so much to illustrate the nature of the parasitic plants, that infest the tissues of living animals. Portions of the scalp, when the disease has continued for any time, may exhibit it in different stages; and here and there may be a white shining space entirely bald; the intervening parts of the scalp, between these affected portions, being always covered to a greater or less extent with a branny desquamation. The disease would seem to be unquestionably communicable, although it may arise, also, spontaneously, like *porrigo favosa*. It is said to be favoured by poverty and insufficient aliment, and by want of cleanliness; and it is certainly most seen amongst the wretched classes of all countries; although, like *porrigo favosa*, it occurs, at times, amongst the wealthy, and without any direct communication being traceable.

**Treatment.**—This is essentially that required for *porrigo favosa*. First of all, emollient and antiphlogistic applications may be needed, and afterwards the various excitants directed under *PORRIGO FAVOSA*.

The disease is extremely obstinate, and demands rigid and prolonged attention.

3. *Porriigo decalvans*, *Tinea tonsdens*, *Herpes tonsurans*, *Alopecia circumscripta*, *Area*, *Tyria ophiasis*, *Accidental Alopecia*, or *Baldness*. There seems to be little reason why this affection should have been classed by Willan and Bateman as a *Porriigo*. It is accidental baldness, owing to some disease about the bulbs of the hair, ending occasionally in their total atrophy. Baldness is at times congenital; at others accidental, as in the case now under consideration; and, at others, the consequence of age. When the hair is lost over a circumscribed spot, it has been called *alopecia circumscripta*, and *area*; when the patches present a serpentine form, *ophiasis* (from  $\phi\phi\iota\varsigma$ , a serpent). If the surface of the scalp be carefully examined, it will generally be readily seen, that there is atrophy of the hair follicles, which, notwithstanding, may be occasionally removed by appropriate treatment. Congenital alopecia, and that which occurs in the progress of age, admit of no remedy. Alopecia is not an uncommon result of severe febrile affections, when it would seem to be owing to impaired nutrition of the hair.

Sex has certainly a predisposing influence. It is much more common in the male. It is exceedingly rare, indeed, to observe it in the female. Mr. E. Wilson is disposed to believe that the difference between the sexes lies in the greater proportion of subcutaneous fat in the female. The scalp of bald persons, he adds, is usually excessively thin; and eunuchs, who are generally fat, are remarkable for the length and permanency of their hair.

**Treatment.**—The great object is to induce a new action in the affected parts by stimulating applications—as the flesh-brush or a rough towel, or various stimulating liniments, freely applied until redness is induced; but they require to be perseveringly employed. Dr. Bateman advises liniments, containing an essential oil dissolved in alcohol,—two fluidrachms, for example, of the *oil of mace* to three or four fluidounces of *alcohol*; or oil of tar, petroleum Barbadosense, camphor, turpentine, &c. The author has seen advantage from creasote ointment. Others employ sulphate of iron, or tincture of cantharides combined with castor oil: almost every variety of stimulating application employed in other cutaneous diseases has, indeed, been prescribed in this.

## V. PAPULAR AFFECTIONS OF THE SKIN.

SYNON. *Papulæ*; *Fr.* *Maladies papuleuses*; *Ger.* *Papeln*, *Knötchen*.

*Papulæ* are simple prominences of the skin, which are small, firm, and solid, and do not contain any fluid, pass off by resolution, and are often followed by furfuraceous desquamation. They are generally of a chronic character, and may appear upon any region of the body; and most of them are accompanied by intense itching. At times, they are so small, that they have to be detected by passing the finger over the surface, rather than by the eye. Generally, they are not attended by any constitutional disturbance; and none of them are contagious. They are not dangerous, but some of them are extremely rebellious,

and the source of extensive discomfort. Many dermatologists reckon three forms of papular diseases—*Strophulus*, *Lichen*, and *Prurigo*; but the two first have been thrown together by others, as being mere varieties of the same affection, modified by the different ages of those who labour under it.

### 1. LICHEN.

SYNON. Papulæ, Papulæ siccæ, Pustulæ siccæ, Scabies sicca, Scabrities, Exormia lichen; Fr. Gale sèche, Dartre furfuracée volante, Poussée; Ger. Hautmoos, Schwindflecke, Knötchenflechte.

Lichen is a disease of the skin, which is characterized by an eruption of minute papulæ, sometimes of a red colour, but more generally differing slightly from the natural colour of the skin, usually agglomerated, or collected in clusters, and attended with much itching. The papulæ, in the most common form of the disease—*Lichen simplex*—are minute, red, often pointed, and scattered irregularly over the part on which they appear. They generally continue with these characters for about a week, when they begin to fade, and end with a slight furfuraceous desquamation. Fresh eruptions, however, usually make their appearance, on the fading away of their predecessors, and they are commonly ushered in by a painful sense of tingling, or of mingled smarting and itching of the parts, occurring especially when the patient is warm in bed.

Various epithets have been given to lichen, to depict some variety in the seat, appearance and form. Thus, when the papulæ appear to be seated at the roots of the hair, which generally constitute an obstinate variety, it is termed *Lichen pilaris*. When it occurs on the legs of elderly and debilitated persons, is intermixed with petechiæ, and has a dusky red or livid colour, it is *Lichen lividus*. When the papulæ, instead of being scattered irregularly, are collected in pretty regular groups, with defined margins, it is *Lichen circumscriptus*. At times, the papulæ compose a kind of lengthened band, which has been seen extending from the anterior part of the chest to the inner surface of the arm, twisting on itself, until it reached the point of the little finger. This is *Lichen gyratus*.

*Lichen urticatus* is another form, in which the papulæ are much larger than in the others, and are elevated, confluent, and inflamed like the stings of nettles. They come out suddenly, and are attended with smarting and distressing itching. The disease is generally seated on the head and face, but it may extend over the trunk and extremities. It appears chiefly in spring, and during the heat of summer; and children, young persons, and females, are said to be most liable to it. It is sometimes attended by febrile phenomena.

*Lichen strophulus*, *Exormia strophulus*, *Strophulus*, *Licheniasis strophulus*, *Exanthema strophulus*, *Ebullitio*, *Tooth Rash*, *Gum* or *Gown*, *Milk spots*; Ger. *Schälknötchen*, *Ansprung*, *Zahnausschlag*, is very common in infants at the breast. It presents considerable diversity in its appearance, and all the forms are seen, at times, on the same child. When the papulæ are red, inflamed, and prominent, scattered here and there, and intermixed with erythematous patches, it is the *Stro-*

*phulus intertinctus* of dermatologists, *Red Gum* or *Red Gown*, Ger. *Häutelblätterchen*. In some cases, they are smaller, or of different sizes, crowding in clusters, and in more extensive crops—the *Strophulus confertus* or *rank red gum*; and, in others, the eruption appears in little circular clusters, somewhat solitary, and generally on each arm or cheek; more commonly, however, flying from part to part—the *Strophulus voluticus*. Sometimes, the papulæ are minute, hard, and of a whitish colour, surrounded occasionally by a reddish halo—the *Strophulus albidus* or *white gum*:—or the pimples are large, glabrous, shining, of a lighter hue than the skin, and without a halo or blush—*Strophulus candidus*, Ger. *Glanznötchen*.

*Lichen agrius*, *Exormia lichen ferus*, *Papula agria*, as the name imports, is a more severe form of the disease, and is characterized by groups of red and inflamed papulæ, united in considerable number, accompanied with intense itching, which scratching augments to an almost intolerable degree. Towards the fourth or fifth day, the inflammation increases; the tips of the papulæ become slightly ulcerated, and a sero-purulent fluid is discharged, which, by concreting on the surface, forms small yellowish, prominent, rough incrustations: these, when detached, are replaced by thin scaly scabs. The local inflammation gradually disappears in from ten to fifteen days. In some cases, however, the discharge persists; other incrustations are formed, and again replaced, and the disease may continue in this form for weeks, or it may become chronic, and persist for months. This form of lichen, which is perhaps nothing more than one or other of the varieties of lichen—especially the lichen simplex and the lichen circumscriptus—in their most aggravated form, appears frequently on the face, and is rarely general. It occurs most commonly in summer. The heat of the sun is a common excitant of lichen in hot, and even in the more temperate climates, during the summer season. The affection, induced in this manner, is *Lichen tropicus* or *prickly heat*; so called from the feeling of pointed bodies running into the skin when the patient moves. Persons who leave a country of lower temperature, and pass to one in which the heats of summer are excessive, rarely fail to suffer greatly from this inconvenient eruption.

An attention to the elementary or papular form of the eruption will generally be sufficient to prevent errors of diagnosis. It must be borne in mind, however, that pustular or vesicular eruptions may exist along with it.

**Treatment.**—It is not easy to account for the appearance of those eruptions. Some of the causes, as in lichen tropicus, are sufficiently manifest. Lichen strophulus, too, is probably connected with the irritation of dentition in some cases, and disorder of the stomach and bowels; but in other cases, neither this nor most of the other forms of lichen can be readily accounted for.

The cases of lichen strophulus, that occur in infants, receive generally but little attention. It is commonly sufficient to administer to the child an occasional dose of rhubarb and magnesia. The cause



of the eruption is generally transient; and, as it passes off, the disease disappears also.

Acute lichen generally requires nothing more than the antiphlogistic treatment, and tepid baths; with a few alkaline baths, towards the disappearance of the eruption, or when the itching is very troublesome. In lichen agrius, active measures may be needed to reduce the excitement,—as bleeding, tepid baths, emollient applications, and cathartics; and in the chronic form, after the excitement has been subdued, the same plan of treatment may be necessary as in eczema.

## 2. PRURIGO.

SYNON. Cnesmos, Scabies papuliformis, Pruritus, Exormia prurigo.

This disease is characterized by small distinct papulæ, without change of colour in the skin, which are most commonly restricted to the outer surface of the limbs and trunk. The eruption is attended with intolerable itching, and this causes the patient to scratch off the tops of the pimples, which become covered with small black crusts of concrete blood. The affection is not communicable: it is almost always chronic, lasting for months and years.

Three varieties are commonly reckoned: 1. *Prurigo mitis*. This, as its name imports, is the mildest form. The pimples are very minute,—so minute, that they do not seem to account for the itching that accompanies them. This is always considerable, but not usually constant, and it is aggravated by stimuli, and by the heat of bed. 2. *Prurigo formicans* is so called from the sense of formication which attends it. The papulæ are here larger and more prominent, and the itching is more intolerable. This variety is more obstinate than the last; for although it may disappear in a few weeks, it is apt to recur for months, and even years. 3. *Prurigo senilis*—as its name imports occurs in the aged, but is not confined to them. It is met with, also, in children of weakly constitution, and is, in all cases, a most obstinate disease,—sometimes, indeed, resisting every remedial agency.

The different forms of prurigo are not unfrequently complicated by various other vesicular, pustular, and sometimes even furuncular inflammations. The skin is deeply inflamed, chapped in many places, and in others greatly thickened. The whole surface, too, when the disease has continued long, almost uniformly becomes affected with an abundant furfuraceous desquamation. Under such circumstances, the general health is apt to suffer; the rest is disturbed, and the constitution fatigued by constant irritation. It is then, also, that the disease is apt to be complicated by the presence of pediculi, which, if care be not taken to prevent them, may swarm in countless multitudes, and give to this form the name *prurigo pedicularis*. The facility with which the insects are reproduced and multiply is sometimes a matter of astonishment.

Several forms of partial prurigo are admitted by writers, although papulæ are not always discovered;—for example:—1. *Prurigo podicis*, which has all the characters of the *P. formicans* aggravated if possible; although the eruption extends no farther than the parts around the anus, and the cleft between the nates; and which is a

very intractable form. 2. *Prurigo genitalium*, which affects the scrotum in males—*Prurigo scroti*; and the pudendum in females—*Prurigo pudendi seu pudendorum*. It is a most distressing malady; and, in the female, may give occasion to nymphomania. *Prurigo præputii* is a variety of the same.

Prurigo is most likely to be confounded with scabies; but scabies is a vesicular disease, and is generally seen on the inside of the limbs at the flexures of the joints, whilst prurigo is commonly found on the back, shoulders, and external surface of the limbs.

**Causes.**—The two extremes of life would appear to be most liable to this disease, and its development is said to be favoured by want of cleanliness, defective nourishment, and an excitant regimen. It rages most, too, according to M. Andral, in hot and variable seasons. Still, as in the case of other cutaneous affections, the causes are generally sufficiently obscure.

**Treatment.**—The milder cases of prurigo may be treated by spare diet, the occasional use of a gentle laxative,<sup>a</sup> and prolonged immersion in a warm bath, or in a weak alkaline or sulphurous bath.

<sup>a</sup> R.—Rhei pulv. gr. x.  
Magnesiæ gr. xv.  
Ol. carui gtt. iij.—M.

Should the symptoms indicate it, bloodletting may be necessary, and a more rigid adoption of the antiphlogistic treatment; but when all signs of febrile excitement have passed away, and the disease still continues, or if it make its appearance in those of advanced life, and under conditions of misery and bad diet, the regimen and system of medication should be strengthening. Ointments of opium,<sup>a</sup> and lotions of the cyanuret of potassium,<sup>b</sup> or the hydrocyanic acid,<sup>c</sup> or simple mucilaginous decoctions or infusions,—as of the mallow, benne, slippery elm, &c.,—may be applied to relieve the itching.

<sup>a</sup> R.—Opii ℥j.  
Adipis ℥j.—M.

<sup>b</sup> R.—Potass. cyanur. gr. xij.  
Mist. amygdal. fʒvj.—M.

<sup>c</sup> R.—Acid. hydrocyan. dil. fʒj.—fʒiv.  
Decoct. malvæ Oj.—M.

In very obstinate cases, the sulphurous water baths, and the sulphur fume-baths, may be employed; and sulphur, alone, or combined with cream of tartar, may be given internally.

R.—Sulphur. gr. x.  
Potassæ bitart. gr. xv.—f. pulv. ter die sumend.

In *prurigo pedicularis*, the fumes of cinnabar are said to destroy the pediculi in a very short period. The *unguentum hydrargyri ammoniati* effects a similar good purpose. In the prurigo podicis and prurigo genitalium, the parts should be bathed with cold water; and cold mucilaginous lotions, like those before recommended, with narcotic washes or ointments, should be applied;—afterwards, the alkaline and sulphurous water baths are the best local applications. Occasionally, good effects are derived from the use of the yellow-wash,<sup>a</sup> or the *unguentum hydrargyri nitratis* properly reduced.<sup>b</sup>

<sup>a</sup> R.—Hydrarg. chlorid. corros. gr. j.—iij.  
Aquæ calcis fʒj.—M.

<sup>b</sup> R.—Ung. hydrarg. nitrat. p. j.  
Adipis p. iv.—M.

M. Prus affirms, that he has often succeeded in the treatment of prurigo, in old men, by lotions of the corrosive chloride of mercury, applied night and morning over all the parts where the papulæ exist.

R.—Hydrargyr. chlorid. corrosiv.  
Ammoniæ muriat. aa ℥j.  
Aquæ Oss.—M.

The same solution has been employed with benefit in the pruritus of the internal surface of the labia pudendi, which occurs occasionally in females in the decline of life, and is exceedingly obstinate.

Professor Meigs states, that having been a great many times consulted for the relief of pruritus vulvæ, and most frequently by pregnant women, he has rarely had occasion to order anything more than the following formula:—

R.—Sodæ borat. ℥ss.  
Morphiæ sulphat. gr. vj.  
Aquæ rosæ f℥viij.

He directs the patient to apply it thrice a day to the affected parts, by means of a piece of sponge or linen, washing the surfaces first with tepid water and soap, and drying them before applying the lotion.

A writer on cutaneous diseases, Dr. J. Green, remarks, that when patients have been lowered by abstinence, and the exhibition of a few doses of purgative medicine, he always recommends the vapour bath to be tried at a low temperature at first; and if, to the temporary excitement, which immediately follows the use of this remedy, an abatement of the symptoms succeed, as usually happens, he then knows, that he can command the disease. "I have even observed," he adds, "that the more inveterate the affection appeared to be,—the more severely the parts affected were excoriated, the more they were complicated with discharging sero-purulent eruptions, the more certainly were they amended and ultimately cured by perseverance in the use, first of the vapour, and then of the hot air, and sulphur fume-bath. Under the use of these means, the thickening of the skin, and œdematous state of the subcutaneous cellular membrane are very speedily dissipated, and the withered, dry, and unspiring surface rendered sleek and velvety to the touch, as it is in health."

## VI. SQUAMOUS AFFECTIONS OF THE SKIN.

SYNON. Squamæ; *Fr.* Maladies squammeuses; *Ger.* Schuppen, Schuppigen Hautkrankheiten.

Under squamous diseases of the skin are usually classed certain chronic eruptions, which are characterized by the occurrence of a greater or less number of red spots or patches, that soon become covered with scales, or lamellæ of the cuticle, altered in its general appearance and texture. There is not, in this division of cutaneous affections, an elementary form to which the disease can be referred, as in the case of the exanthematous, vesicular, and other eruptions; the squamæ or scales are really the product of a morbid state of the skin, which differs in its character in the different affections, so as to give rise to the appearance of the epidermoid exudation, which they respectively present. In many of the cutaneous affections, that have

already engaged attention, incrustations have been spoken of, but they have been owing to the desiccation of fluids that have been contained in vesicles or pustules. The scales—in the disease now to be considered—are portions of the epidermis, altered in its qualities, and hence the different squamous affections have been classed by a distinguished pathologist, M. Andral, under, “Diseases of the skin, characterized by a lesion of secretion.” The number of squamous diseases, so classed, is not more than four,—*Lepra*, *Psoriasis*, *Pityriasis*, and *Ichthyosis*. The two first are considered by some as modifications of one and the same disease, and they certainly occur very frequently at the same time in the same subject.

The squamous diseases are generally attended with but little constitutional disturbance; nor do they commonly give occasion to much local inconvenience, until they have existed so long that the integuments of the parts affected become indurated and thickened. They are none of them communicable or attended with danger, but they are unsightly, and therefore the occasion of much uneasiness, especially as they are not readily removed by any mode of treatment.

#### I. LEPRA.

SYNON. *Lepidosis lepriasis*, *Vitiligo*, *Lepra Græcorum*, *Herpes furfuraceus circinnatus*, *Leprosy*; *Fr. Lèpre*, *Dartre furfuracée arrondie*; *Ger. Aussatz*, *Maltzey*, *Misselsucht*.

*Lepra* is characterized by scaly patches, of a roundish shape, arranged in circles or rings, commonly circumscribing a space in which the skin preserves its integrity.

*Lepra vulgaris*—*Psoriasis circinnata*, of some—occurs in the form of distinct, circular, scaly patches, with raised circumferences and depressed centres, sometimes intermixing, so as to form a continuous scaly surface. It may occur on any part of the body, but is more frequently met with on the limbs, and near the joints, especially the knees and elbows. It begins, at first, by small scaly patches, which spread, retaining their circular shape; the scales, too, become thicker, especially at the margins of the patches, which, therefore, appear elevated. The centre becomes free as the circle enlarges, and it commonly remains so, except in rare cases, in which the scales accumulate over the surface, and form thick prominent crusts. When the patches are very large, their circular raised borders are covered with thick, adherent, white scales, whilst the centre appears depressed and healthy. As the patches augment in dimension, the eruption spreads on the abdomen, shoulders, back, chest, and sometimes on the scalp and forehead; seldom on the face and hands. The progress of this affection is always slow, often for many years. When it disappears, the rings break, the elevations sink and grow paler, and finally disappear, and the skin resumes its healthy state. It is usually by no means a serious affection, and rarely gives occasion to any marked derangement of health.

CAUSES.—The causes of *lepra* are involved in the same obscurity as those of chronic cutaneous diseases in general. It is met with amongst the poorer classes of all countries, but is more frequent and severe in warm climates, and is not confined to the poor, but is said to attack

those frequently who have gouty constitutions. Dr. Mackintosh remarks, that for many years, he had paid considerable attention to disorders of the skin, and a great many cases of lepra and psoriasis had fallen under his observation: in all the cases but one, gastro-intestinal irritation was discovered, and in that one there was great mental anxiety, with despondency, and hepatic derangement. Still, this observation leaves us equally in the dark; for although gastro-intestinal irritation is extremely common amongst us, lepra is rare. The causes, that give rise to the peculiar phlegmasia of the skin, remain to be appreciated.

**Treatment.**—This is so identical with that for psoriasis, that it may be appropriately considered under the latter head.

## 2. PSORIASIS.

SYNON. Serpedo, Serpigo, Scabies sicca, Scabies ferina, Psora leprosa, Lepidosis psoriasis, Impetigo, (of some,) Psora squamosa, Dry scall, Scaly tetter, Small dry scall; *Fr.* Dartre écaillée, *D.* squammeuse; *Ger.* Räude, Schuppenflechte.

Psoriasis is characterized by slightly raised red patches, of various extent and shape, which are generally covered with whitish, laminated, dry scales, of different thickness;—the characters, which distinguish lepra vulgaris from psoriasis, consisting chiefly in the shape of the patches, which is circular in the former,—of irregular outline in the latter disease. In the most simple form, psoriasis appears in the shape of small, red, distinct elevations, of the size of large pin-heads, which speedily become covered, on their tops, with thin, dry, white scales. These little raised spots enlarge gradually, but not very evenly; and, whilst they are on the increase, always continue more elevated in the centre than around the circumference; it is only when they begin to go off, that they appear depressed in the middle;—the patches of psoriasis, like those of lepra, getting well chiefly from the centre towards the circumference. The patches, at their height, are not more than about one-fourth of an inch in diameter, and being covered with somewhat translucent and rather opalescent scales, they look very much like large drops of liquid, adhering to the surface of the region upon which they are formed; whence the term *Psoriasis guttata*,—the *P. discreta*. The scales, when detached, are readily renewed, and the surface they covered appears highly inflamed, and somewhat raised above the level of the surrounding skin. They are, likewise, the seat of considerable pain, when the scales are removed.

In *Psoriasis diffusa*, *P. confluens*—the *Dartre squammeuse lichénôide* of Alibert—the skin is covered with much larger patches, of irregular shape, which, by their union, cover, at times, the whole anterior surface of the leg from the instep to the knee, or the whole extent of the posterior surface of the forearm,—the elbows and knees being seldom free. On these parts the disease disappears slowly. Beneath the scales, the surface is very red, and extremely tender, accompanied by a sensation of burning and severe itching, and often by painful fissures and chaps. It commonly attacks adults, but is met with, also, in infants—*Psoriasis infantilis*—and is attended, at times with slight

constitutional disturbance. *Psoriasis gyrata*, is a very rare form of the disease, in which the eruption appears generally on the back or shoulders, in a spiral or serpentine form.

These are the chief varieties; for *Psoriasis inveterata* is but a more obstinate form of the disease, occurring most frequently in aged individuals, and in broken-down constitutions. The parts of the skin, which are the seat of the affection, are thickened, hard, and unyielding; and the surface is red, chapped, rough, and uneven. The scales are no longer thick, and of large size; but a sort of furfuraceous desquamation supervenes, which fills up the furrows and is readily detached. When these patches surround the joints, they are intersected with deep, bleeding, and always very painful fissures. This inveterate form of psoriasis is most frequently seen on the limbs, and it extends even to the roots of the nails—*Psoriasis unguium*, which become misshapen, rough, and ragged; split, and are replaced by others more like friable scales than nails.

Various forms of partial psoriasis have been designated by dermatologists. For example, the genital organs of both sexes may be implicated. In man it may attack the prepuce—*Psoriasis præputialis*,—or the scrotum—*Psoriasis scrotalis*; and, in women, the labia majora. The parts, in such cases, are generally thickened and fissured, bleeding when stretched, and covered with thin, light scales. The *psoriasis ophthalmica* appears in the form of little squamous patches about the angles of the eyes, and over the eyelids, which are tense, painful, itchy, and impeded in their motions. When the disease is obstinate, the conjunctiva is sometimes inflamed.

One of the most interesting forms of partial psoriasis is *Psoriasis palmaris* seu *palmaria*, commonly called *Grocer's itch*, and *Baker's itch*, which begins on the palms of the hands, in the form of one or more red, slightly raised, hard spots, which are soon covered on their tops with little dry, white scales: these, on falling off, are replaced. The circumference of the patch gradually augments, until the whole hand is concerned. Frequently, the affected parts to the tips of the fingers become hard, stiff, and dry; the hand remains in a state of semiflexion, and cannot be opened without great pain; the lines, naturally observed on the palm, are greatly increased in depth, and the spaces between them are covered with thick laminated scales. In protracted cases of the disease, these lines change into fissures, which bleed, whenever attempts are made to use the hand. The parts are always highly inflamed, and in general acutely sensible.

Psoriasis also attacks, at times, the backs of the hands chiefly; and both, this and the psoriasis palmaris are frequently seen in grocers, bakers, dyers, washwomen, smiths, and in those of other occupations in which excipients are applied to the hands. Except in these cases, the causes are exceedingly obscure. It certainly is not communicable; but a disposition to it would appear to be transmissible from progenitors. It occurs in all seasons, but more particularly, it is said, in the spring and autumn; and attacks individuals in every class of society, although it is more frequent amongst those who live in the midst of filth and wretchedness.

**Treatment.**—In the treatment of lepra and psoriasis, great patience and perseverance are demanded. The most manageable form of psoriasis is the *P. guttata*; but in whatever shape these cutaneous affections occur, attention must be paid to the accompanying condition of the system, and to the appearance of the eruption. Should the disease be of recent date, and attended with considerable inflammation, and uneasy sensations in the patches, general bloodletting and cathartics, with the whole antiphlogistic regimen, may be needed, and the parts themselves should be bathed with emollients of various kinds,—as flaxseed infusion, or some tepid gelatinous fluid,—as a solution of glycerin, in the preparation of half an ounce to ten fluidounces of water, which does not readily evaporate, and therefore prevents the skin from becoming dry; or they may be anointed with cream or hog's lard, or with codliver oil—*Oleum jecoris aselli*. A strict regimen and rest should also be enjoined. On the other hand, where the frame is debilitated, the constitution broken down, and no manifest signs of inflammation accompany the eruption, gentle tonics, with change of air, and nourishing diet, so as to improve the general health, may be essential. In very few cases of either lepra or psoriasis does the external treatment alone suffice. The disease can rarely be broken in upon, except by acting in two ways on the morbid condition of the system of nutrition of the skin,—that is, by external agents assiduously applied to the eruption, and by internal remedies, which may modify the condition of the circulating fluid, and, through it, that of the morbid tissues.

The topical applications, which have been advised, have been numerous and varied: indeed, it has been properly remarked by MM. Bielt and Schedel, that it is almost impossible to judge, *à priori*, what remedies will be most advantageous, and often the various therapeutical agents we possess must be tried in succession, before the right one is discovered. Of these applications it would be difficult and unprofitable to make a catalogue. It will be sufficient to indicate the most prominent, and such as are chiefly in use at the present day. It is proper, however, to premise, that when the affection covers a large surface, it is not easy, nor is it, in the case of certain of the applications, proper, to cover the whole of the affected parts with them.

Several of the preparations of mercury have entered into the different unguents, &c. The citrine ointment—*Unguentum hydrargyri nitratis*—and the white precipitate ointment—*Unguentum hydrargyri ammoniati*—properly regulated in regard to strength; the ointment of the iodide of mercury;<sup>a</sup> or a liniment of the red iodide;<sup>b</sup> or an ointment of the same;<sup>c</sup> or the *liquor arsenici et hydrargyri iodidi*, diluted with an equal portion of water, may be prescribed.

<sup>a</sup> R.—Hydrarg. iodid. ℥j.  
Adipis ℥j.—M.

To be rubbed on the parts affected, night and morning.

<sup>b</sup> R.—Hydrarg. iodid. rubr. ℥j.  
Olei amygd. f ℥j.—M.

The parts to be pencilled with it, three or four times a day.

<sup>c</sup> R.—Hydrarg. iodid. rubr. gr. xv.  
Adipis ℥ij.  
Ol. limon. gtt. x.—M.

Or, the tar ointment—*Unguentum picis liquidæ*; or the ointment of creasote;<sup>a</sup> or a liniment of the same;<sup>b</sup> or an ointment of the sesquiodide of carbon;<sup>c</sup> or of the iodide of ammonium;<sup>d</sup> or of the iodide of sulphur, may be advised.<sup>e</sup>

<sup>a</sup> R.—Creasot. ℥ss.

Adipis ℥j.—M.

<sup>b</sup> R.—Creasot. grt. v.—xx.

Olei olivæ f ℥ss.—M.

<sup>c</sup> R.—Sulphur iodid. ℥j.—℥ij.

Adipis ℥j.—M.

<sup>c</sup> R.—Carbon sesqui-iodid. ℥ss.

Cerat. simpl. ℥vj.—M.

<sup>d</sup> R.—Ammon. iodid. ℥j.—℥j.

Adipis ℥j.—M.

Naphthalin has also been used successfully by M. Emory, in the form of ointment.

R.—Naphthalin. p. ij.

Adipis p. xxx.—M.

And M. Romberg found the *Aqua picis liquidæ*—tarwater—to effect a cure of psoriasis inveterata, when all other means had failed. It was prepared after the formula of Arnheimer (the author's *New Remedies*, 5th edit., p. 76, Philad. 1846), and a beerglassful of it (four fluidounces ?) was directed to be taken every morning, fasting, and the parts affected to be bathed with it twice or thrice a day. Its use may be continued for months, the only apparent effect being slight diuresis. It has been advised, also, that the patches should be touched with a liniment composed of *olive oil* and *rose water*, each one ounce; *liquor potassæ*, half an ounce; and when they are small, as in psoriasis guttata, they may sometimes be touched advantageously with strong acetic acid, or aromatic vinegar, or the mineral acids, more or less diluted; but care, it need scarcely be added, must be used in the employment of these potent agents, and they can never be proper in the early and inflammatory stage. Anthrakokali and fuligokali—simple and sulphuretted—have been recommended both internally and externally. Mr. E. Wilson affirms, that he has employed fuligokali in several cases, and especially in psoriasis palmaris, and with better success than he had obtained from the usual remedies.

As auxiliaries, various baths of a more or less exciting character have likewise been prescribed, and, at times, with advantage:—for example, the vapour and hot air baths, the alkaline and sulphurous liquid baths, and the sulphur fume bath. Chlorine fumigations have also been used in these affections, as well as in scabies, and they have proved useful; but generally, fumigations of sulphurous acid are employed by preference, in consequence of the greater facility with which they can be prepared.

In long protracted and inveterate cases, various internal remedies have been advised, in conjunction with one or other of the external agents just enumerated. Many of these, it is probable, are inert,—for example, the decoction of dulcamara; and, in the author's opinion the infusion, decoction, and extract of sarsaparilla, respecting the virtues of which so much discordance still exists. The great object—as already remarked—is to modify the condition of the circulating fluids, and, through them, to act upon the tissue whose nutrition is morbidly affected. None of the agents, just mentioned, have probably any such power, unless they are given in the form of syrup; and, in this case,



they are indebted to the saccharine matter for their virtues. These cutaneous affections are cases in which syrup, administered in the form often advised, ought to form a part of the treatment; and it is easy to give many of our remedial means in it. Amongst the most valuable of these are the preparations of arsenic;—the *liquor arsenitis potassæ*, the *liquor arseniatis sodæ*; the iodide of arsenic, as advised under ECTHYMA and IMPETIGO; or the iodide of arsenic and mercury,<sup>a</sup> as recently administered with advantage in Ireland, and elsewhere, by many distinguished therapeutists. (*New Remedies*, loc. cit.)

<sup>a</sup> R.—Liquor arsenic. et hydrargyri iodidi, fʒij.  
 Aquæ destillat. fʒiiss.  
 Syrup. zingib. fʒss.—M.

A fourth part to be taken night and morning.

Great advantage has, likewise, been derived from the use of the arseniate of ammonia.

R.—Ammon. arseniat. gr. j.  
 Aquæ destillat. fʒj.—M.

Dose, twenty to twenty-five drops in the day; gradually increasing it to a drachm or more in the 24 hours.

In all these cases, the remedy may be administered in a wineglassful of simple syrup, and this may be taken between the meals, so as not to be interfered with by digestion.

Naphthalin has also been advised internally, by M. Emory, in the dose of from eight grains to thirty given in emulsion or syrup, and repeated *pro re natâ*; and the tincture of cantharides has been much prescribed by some practitioners, (gtt. iv.—vj., bis die, ex *infuso lini*;) but it is liable to excite great irritation in the urinary organs; the revulsive effect of which, by the way, may be the mode in which the cantharides act beneficially, if they ever do so. They are not much used in this country, and are probably one of the numerous agents that have been suggested empirically in this and other inveterate maladies. Cantharides have, likewise, been employed externally. Dr. Davidson, of the Glasgow Royal Infirmary, noted the comparative effect of iodide of sulphur, and the acetum cantharidis of the Edinburgh Pharmacopœia, in an inveterate case of several years' standing, in which a variety of remedies had been tried in vain. The iodide of sulphur was applied to the lower extremities, and the acetum cantharidis to the arms; and, from the results of his observations, he is satisfied, that the latter had more power over the disease as a local agent: he found the proportion of cantharides in the officinal formula too small, and therefore doubled it. Strong pyroligneous acid, too, was used alone, without the addition of the acetic. Dr. Davidson recommends the following liniment, which is a modification of the *emplastrum cantharidis* of the Edinburgh Pharmacopœia, as superior to any preparation he has tried. It is sufficiently soft, during warm weather, to be applied with a brush, but requires to be heated when the temperature of the air is low.

R.—Adipis  
 Ol. rapii  
 Cantharid. pulv. aa ʒj.

In order to succeed with any of these vesicating agents, the skin

should be previously softened, either by the warm bath, or by sponging with warm water.

A thorough change of the system of diet to which the patient has been accustomed, as well as of all the influences surrounding him, by travelling, is advisable, whenever this is practicable; and a visit to the sulphurous springs, with the internal and external use of the waters, has, at times, effected a cure in very rebellious cases.

### 3. PITYRIASIS.

**SYNON.** Pityriasis, Pityrisma, Herpes furfuraceus, H. farinosus, Furfuratio, Lepidosis Pityriasis, Dandriff; *Fr.* Dartre furfuracée volante; *Ger.* Hautkleie, Kleiengrind; kleien-artige, mehlig, einfache Flechte, Kleienauschlag.

This affection, as its name imports, is characterized by a kind of branny (*πιτυρον*, "bran") exfoliation of the cuticle; most commonly seated in the parts that are covered with hair, and especially in the scalp. The exfoliation is usually preceded by a slight reddish colour of the integument. Four varieties have been admitted by the generality of dermatologists.

*Pityriasis capitis*—so called from its appearing on the head—is chiefly seen in childhood, and is indicated by slight itching, and copious furfuraceous desquamation that supervenes on scratching. *Pityriasis rubra* is so called from its appearing in small, light red spots, which gradually extend, coalesce, and form large continuous surfaces, covered with a branny desquamation, under which the epidermis appears of a dull crimson red colour. It is not a common variety. When any part of the surface is affected with a variegated discoloration of the epidermis, the variety is termed *pityriasis versicolor*. It may occur on any part of the body, but it is generally seen on the breast, epigastrium, and other parts that are covered. Lastly, a form of the disease, termed *pityriasis nigra*, was observed frequently during the prevalence of an epidemic ACRODYNIA (q. v.), which existed in Paris in the years 1828 and 1829. The disease, treated of by Bateman under the name *pityriasis nigra*, is not accompanied by any desquamation, and consequently does not belong to the squamous phlegmasia of the skin. It has been classed by other dermatologists under the *Dischroa* or *Maculæ*.

**Causes.**—These are very obscure. The general health is rarely concerned. In the absence of better reasons, the affection has been ascribed to want of proper cleanliness. *Pityriasis rubra* has been traced—it is affirmed—to exposure to the sun's rays; to the use of exciting drinks, and of particular articles of diet, as mushrooms, &c.; but it must be admitted that the etiology is involved in darkness.

**Treatment.**—When dandriff occurs in children, it can be removed by due attention to cleanliness, and the constant use of a soft brush. The idea that a hard comb is advisable is pernicious. When the disease is obstinate, and to a great extent, some of the milder ointments or alkaline washes, recommended under Psoriasis, may be found serviceable. The use of sulphurous lotions, and of sulphur or the sulphuret of potassium internally, has been efficacious. The iodide of sulphur makes an excellent ointment in this as in various other

chronic cutaneous diseases. When pityriasis does not yield to these external applications, recourse may be had to the combined employment, internally, of the preparations of arsenic and the other therapeutical agents, recommended under the last head.

#### 4. ICHTHYOSIS.

SYNON. *Lepidosis ichthyiasis*, *Lepra ichthyosis*, Fish-skin, Fish-skin disease; *Fr.* Ichthyose; *Ger.* Fischschuppenausschlag, Fischhaut.

Ichthyosis is characterized by a morbid condition of the cuticle, which appears thickened, split into square and irregular compartments of different shapes and dimensions, of a dirty grayish, greenish, or brownish colour, and resting upon a surface which is never inflamed, and from which it does not exfoliate as in psoriasis. M. Andral remarks, that if there be any disease, unconnected with the inflammatory element, it is ichthyosis. As the disease advances, the cuticle often becomes greatly inspissated, having been seen little short of half an inch thick in some cases. Yet the epidermis, in its sensible or chemical properties, does not seem to differ from the healthy state. Instead, also, of appearing mechanically divided, or cracked into angular pieces, as it usually does, the cuticle is sometimes produced in the form of pointed prolongations, as if it had been moulded on the papillæ, like the shorter and blunter quills of the porcupine. Hence, persons so formed, have been termed *porcupine men*. The diagnosis of this affection is not difficult. There is an absence of all vesicular, pustular, papular, and squamous characters, and it would seem to be almost always congenital, or to appear not long after birth.

The name *Ichthyosis sebacea* has been given by Mr. E. Wilson to a morbid condition, in quality and quantity, of the secretion from the sebaceous glands of the skin, which spreads upon the surface of the epidermis, forming a thin layer, that dries and hardens, and breaks in the direction of the linear markings of the skin into small polygonal portions. These concretions increase in thickness by the accumulation of fresh sebaceous secretions, and become discoloured from exposure to dust and dirt. The small masses have the appearance of scales closely adherent to the epidermis, hard and dense in texture, and presenting various degrees of thickness.

The affection is generally unaccompanied by signs of local inflammation of the skin, and is rarely attended by constitutional symptoms. It may be distinguished from true ichthyosis by the evident epidermic structure, and greater density of the scales in the latter; and by the comparative softness of the scales, and the unaltered condition of the epidermis in the former.

**Treatment.**—Not much can be done where the disease is general. Frequent bathing, and a due attention to cleanliness are indispensable. In this way, the altered cuticle may be detached, but it is in general, speedily reproduced. It may be proper to change the morbid condition of the skin, in partial ichthyosis, by the remedies, internal and external, advised under Psoriasis; and benefit is asserted to have been derived from the application of blisters, but it must be admitted, that the affection is too often rebellious under the best devised treatment.

The best treatment for ichthyosis sebacea is to remove the scaly concretion by means of the warm bath or warm fomentations, rendered moderately alkaline by the subcarbonate of soda or of potassa, several times repeated; after which the sebaceous glands may be excited to healthy action by frequent ablutions with warm or cold water, succeeded by brisk frictions with a rough towel, sea-bathing, and astringent lotions or ointments, composed, for example, of sulphate of copper or sulphate of zinc. Mr. Wilson states, that in one case of the disease he obtained much benefit from the exhibition of milk of sulphur. The bowels must be kept open, and the diet be regulated.

## VII. TUBERCULOUS AFFECTIONS OF THE SKIN.

SYNON. Tubercula; *Fr.* Maladies tuberculeuses; *Ger.* Knoten.

It has been elsewhere remarked as unfortunate, that the term *tubercle* has been employed in pathology with two significations; the one comprising those heterologous formations, which occur in the constitutional disease of tuberculosis, and which have been described in the early part of this work; and the other embracing affections of the skin, that are characterized by small, primary, solid, circumscribed, and enduring tumours, of various sizes, developed in the substance of the integuments, the tendency of which is, at times, to partial suppuration at the summit, or ulceration of an obstinate and generally destructive kind. The class includes some formidable affections, which, fortunately, in this country, are not of usual occurrence. Some of them, too, fall almost entirely under the charge of the surgeon, and, therefore, do not demand consideration here.

The diseases, that belong to this division are,—*Lupus, Elephantiasis Græcorum, Frambæsia, Molluscum, and Cancer.*

### I. LUPUS.

SYNON. *Lupus vorax, L. herpeticus, Herpes exedens, H. phagedænicus, H. esthiomenos, H. ferus, H. depascens, Formica corrosiva; Fr.* Dartre rongéante, Estiomène, Esthiomène; *Ger.* Hautwolf, Fressender, offener Krebs, fressende Flechte.

This tuberculous affection is most commonly seated on the face, and is characterized by the development of broad, flattened tubercles, of a dark red colour, which open sooner or later, and are converted into spreading ulcerations covered with incrustations. According to the various aspects it assumes at the commencement, it has been divided into three varieties:—1. That in which continuous surfaces are destroyed, *Exfoliative lupus*. 2. That which destroys in depth, *Ulcerative lupus*; and 3. That which is attended with hypertrophy of the diseased surfaces; *Hypertrophied lupus*; *Ger. Hypertrophische lupus. (Blasius.)*

1. The first variety—in which continuous surfaces are destroyed—is not unfrequently seen. It occurs most commonly on the cheeks, and appears to destroy the superficial layers of the skin only. In the simplest case, there is no tubercle or incrustation; but a slight desquamation occurs, which leaves the surface of the skin beneath red and shining. When the disease stops, the desquamation ceases, but the surface always remains thin and shining, as if it had been seared by

a red-hot iron. In cases of somewhat greater severity, small tubercles form, which may remain quiescent for a longer or shorter period; but ultimately coalesce, and ulcerate at their summits, so as to form thick incrustations. In other cases, however, of still more severity, the tubercles become the seat of irritation; their number augments, the intervening spaces appear swelled and œdematous, and the disease slowly extends over the whole face, destroying the nose. This variety may occur, likewise, in large continuous patches on the chest, the anterior part of the thighs, and other portions of the extremities.

2. The variety of lupus, that destroys the parts in depth, commences with one or more small tubercles on the *alæ* or tip of the nose, which are smooth, soft, and dusky-coloured. These may remain indolent for a time, after which they form deep ulcerations, which sometimes destroy the soft cartilaginous parts of the nose. The ulceration begins, at times, in the mucous membrane of the nose, and the cartilaginous septum may be destroyed before any ulceration has taken place externally. It has been seen, too, penetrating the nasal fossæ, returning by the roof of the mouth and gums, and destroying all the parts more or less.

3. Lupus attended with hypertrophy is analogous, in the shape of the eruption, to elephantiasis. It is always confined to the face, where it appears in soft, slightly prominent, and indolent tubercles, which are developed simultaneously over a considerable extent of surface. In this variety, ulceration does not often take place at the summits of the tubercles; but their bases augment, and the integument between them becomes hypertrophied, so that, ultimately, the intervening spaces are filled up, and the face becomes hideously enlarged.

These three varieties may exist at the same time. Large portions of the lips and eyelids are sometimes destroyed, and the conjunctiva is attacked with chronic inflammation, which, in some cases, induces blindness.

It has been remarked, that the cure of this affection is singularly influenced by the occurrence of erysipelas,—doubtless by the new action induced by it in the vessels of the cutaneous envelope. A writer of eminence, M. Andral, affirms, indeed, that the presence of erysipelas is the most favourable condition for the cure of lupus; and he suggests, that it would be advantageous if we could induce erysipelas artificially in such cases.

Young persons are more liable to it than adults; if we except, perhaps, the first variety, described above, which the author has seen more frequently in the latter. It is stated by MM. Andral and Most to be rare after the age of forty. Of its causes we know nothing, but the scrophulous temperament would appear to give a predisposition to it. It has been seen, however, in those in whom scrophula could not be suspected. It is asserted, by some, to have been met with more frequently in the country than in towns; which has been ascribed to the inhabitants of the former eating cheese, and salt provisions; but, in the first place, the fact is by no means established, and were it so, the explanation does not appear to be satisfactory.

**Treatment.**—As the disease seems to be connected with a vicious

condition of the nutritive functions, it is important to inquire into the nature of this *vice*, and to treat it accordingly. Generally, it will be advisable to have recourse to the various internal remedies recommended for scrophulosis—as the preparations of iodine, either alone or in combination with mercury or arsenic, or both. The red iodide has been found especially beneficial.

R.—Hydrarg. ioidid. rubr. gr. v.  
 Micæ panis  
 Sacchar. pulv. aa q. s. ut fiant  
 pil. lx.  
 Dose, two, morning and evening.

Or  
 R.—Hydrarg. ioidid. rubr. ʒj.  
 Alcohol f ʒiss.—M.  
 Dose, ten to twenty drops, in a glass of water.

Iodide of mercury and arsenic has been greatly extolled. (See the author's *New Remedies*, 5th edit. p. 368, Philada. 1846.) Chalybeates—as the ferri subcarbonas—have likewise been found of decided benefit; and in this disease, as well as in other obstinate cutaneous affections, which had resisted other remedies, Mr. M'Dermott found the protochloride of mercury and quinia, given in the dose of one grain three times a day, entirely successful.

External remedies have generally been most trusted to. The iodide<sup>a</sup> and red iodide of mercury,<sup>b</sup> creasote,<sup>c</sup> or iodide of sulphur,<sup>d</sup> rubbed on the tubercles, or on the incrustations, six or eight times a day, washing the parts, first of all, with warm soap and water, have been found very serviceable.

<sup>a</sup> R.—Hydrarg. ioidid. ʒj.—ʒss.  
 Adipis ʒj.—M.

<sup>c</sup> R.—Creasol. f ʒss.  
 Adipis ʒj.—M.

<sup>b</sup> R.—Hydrarg. ioidid. rubr. gr. xij.—ʒss.  
 Adipis ʒj.—M.

<sup>d</sup> R.—Sulphur. ioidid. ʒj.—ʒss.  
 Adipis ʒj.—M.

In a recent case of the first variety of lupus, the author succeeded in entirely arresting the disease by the use of creasote ointment, applied assiduously, with ten drops of *Lugol's solution*, taken three times a day, internally. Mr. John Davies, asserts, that in lupus or *noli me tangere*, the strong tincture of iodine, laid upon the ulcerated surface cured the disease without the use of internal remedies. Cod-liver oil may also be used in alternation with any of the ointments prescribed above, and be given internally at the same time. M. Gibert has recorded the case of a young female successfully treated in this manner. The face was eaten away by tuberculous ulceration,—the fleshy parts of the nose being completely destroyed. Scrophulous abscesses also existed in the neck, with caries of the malar bone, and white swelling of the wrist. Cod-liver oil was prescribed both internally and externally, and succeeded after the internal and external use of iodine had failed. The treatment was, however, continued for more than a year.

The application of caustics is had recourse to by many. Before so doing, it is well to premise the use of emollient cataplasms to remove the incrustations. The caustics used are—the acid nitrate of mercury, and the chloride of antimony. Occasionally, creasote has been applied. Mr. Alex. Ure, has found chloride of zinc speedily check, and permanently cure, the disease. He applied it in a paste, made with one part of the *chloride* and two or three parts of the *anhydrous sulphate of lime*. One or two applications of the paste were generally sufficient

to produce a proper eschar, and when this was detached, the sore was treated with water dressing. Others use the *powder of Dupuytren*, which is a mild and manageable caustic. It is composed of one part of arsenious acid, and 200 parts of calomel, and is employed in lupus when the ulceration is superficial, and of limited extent. If the diseased part be dry, it may be necessary—as suggested by M. Cazenave—to denude it by means of a blister, and then to sprinkle the powder on the raw surface.

The *Vienna powder* and *paste* are regarded by M. Cazenave as caustics of great power in certain cases of lupous ulceration. They are composed of equal parts of powdered quicklime and potassa cum calce. In using it, it is made into a paste with spirits of wine, and is applied upon the diseased part, previously exactly circumscribed by a hole cut in sticking plaster. The paste is to be left on for ten or twenty minutes, according to the depth of the required eschar.

In cases of long-standing lupus, M. Cazenave, prefers an arsenious paste, made of arsenious acid two parts; sulphate of mercury, one part; animal charcoal in powder, two parts, well mixed together. A small quantity of this powder is made into a thin paste with a few drops of water. This is placed upon the surface to be acted on, which should never exceed the size of a shilling. The caustic not only produces sharp pain, but also a severe erysipelatous swelling, which continues for several hours, but is not to be dreaded. On the contrary, it is often highly salutary.

## 2. ELEPHANTIASIS GRÆCORUM.

SYNON. *Lepra tuberculosa*, L. *Ægyptiaca*, L. *Alba*, L. *Hebræorum*, L. *leontina*, L. *Mosaica*, *Tsarath* of Moses, *Leontiasis*, *Satyriasis*, *Lepra*, *Leuce*, *Morphæa alba*, *Baras*, *Vitiligo*; *Fr.* *Lèpre tuberculeuse*, *Eléphantiasé des Grecs*, *Ladrière*, *Tête de veau*, *Mal rouge de Cayenne*; *Ger.* *Weisse oder Mosaische Aussatz*, *Knollige Aussatz*.

Tuberculous lepra or elephantiasis of the Greeks is said to be characterized by small tumours, which appear chiefly on the face, but are seen, also, on other parts of the body. They are of irregular shape; vary much in size; are soft to the touch, and of a reddish or livid colour at first; but, subsequently of the same colour as the rest of the surface. When they occur upon the face,—the nose, ears, lips, &c., become involved in the eruption, and as it is accompanied with a thickened and rugous state of the skin, the features become terrifically deformed, and the altered integument has been likened to that of the elephant, whence the name of the disease. The affection is hardly known in Europe, except in persons who have resided in intertropical countries; nor is it usual with them. The *spedalske* or *spedalskhed*, or *Norwegian Lepra*, is considered to be a variety of it. The common idea was, that it is communicable by contagion; but the evidence is strongly against this; so much so, that few—if any—now entertain the belief: in this respect it would appear to differ essentially from the elephantiasis or Greek leprosy, which prevailed so extensively in Europe during the middle ages, and was universally held to be contagious. A predisposition to it would seem, likewise, to be laid in the organization of the child, where the parent has suffered from it. In climates that are favourable to it, it is affirmed, that heat and moisture

aid its development,—as well as imperfect nutrition,—any cause, indeed, that reduces the system beyond the due point, or deranges the organic actions. Accordingly, the habit of drinking spirituous liquors has been classed amongst the occasional causes.

The disease is exceedingly obstinate, and the prognosis very unfavourable: it has been doubted, whether any more than temporary benefit have been derived from any course of treatment. The organs of the voice, and afterwards those of respiration and digestion, ultimately become affected almost invariably; and the patient dies of chronic pneumonia, of phthisis, or of disease of the lining membrane of the alimentary canal.

**Treatment.**—When the disease is first observed, it has been advised, that the climate should be changed immediately, and every endeavour be made to induce a thorough revulsion in the system of nutrition. The preparations of sarsaparilla, and especially the old decoction of the woods—*decoctum sarsaparillæ compositum*—have been largely exhibited, but the evidences in their favour are not strong. The greatest number of testimonials has been brought forward in favour of arsenic, which has been given both in the form of arsenious acid, and of Fowler's solution—the *liquor arsenitis potassæ*. The different preparations of iodine, recommended under *lupus*, may be administered, as well as escharotics, which may induce a new action in the vessels of nutrition of the skin.

As in *lupus* it has been observed, that intercurrent erysipelas has acted beneficially; and, from the hint thus obtained blisters have been applied to the affected parts by M. Bielt. The actual cautery has also been used by him with benefit in the advanced stages.

The general symptoms must be met, according to the precise indications that may present themselves.

In the Norwegian leprosy, Dr. Danielsen prefers bloodletting to every mode of treatment. He found, in the tubercular form, the greatest benefit from repeating it ten, twelve, or fourteen days in succession; and although the patients were of course greatly reduced by such active treatment, they often earnestly asked for it from the great alleviation of suffering, which they experienced. The blood always presented a distinct inflammatory crust, of a greenish hue, but no chemical or microscopical investigation of it was attempted.

### 3. ELEPHANTIASIS ARABUM.

SYNON. E. Arabica, Barbadoes leg, Glandular Disease of Barbadoes, Galle leg; Fr. Lèpre Eléphantiasé, L. tuberculeuse, Eléphantine, Sarcocèle d'Égypte (*Larrey*), Jambes de Barbade.

This affection is characterized by an indolent, hard, enduring enlargement of the integument generally of one of the lower extremities, or of the scrotum. It may occur, however, in other parts. In a case, now under the author's charge, the arm was first affected, and afterwards the lower extremity: when this last is the seat of the disease, the limb may become so enormously swollen as to resemble that of the animal, whence it obtains its name. It is met with chiefly in the



West India Islands, in some of which it is endemic. It prevails also in Egypt, where it was seen by Baron Larrey.

The disease consists in some *vice* of the system of nutrition, the cause and nature of which are inexplicable. The bodily health often does not suffer materially; but there is generally, at the beginning, more or less constitutional irritation: often the part is hot and painful, and more or less redness, it is affirmed, may be perceived in the course of the lymphatics. The limb continues tumefied after these symptoms have subsided, and goes on increasing in size until, at times, it becomes enormous. It is very liable, too, to renewals of the inflammation, and occasional ulcerations, so that a question may arise, whether it may not be advisable to remove the limb. As, however, occurred in the case already referred to, the ulcerations may heal, the limb remain permanently enlarged, and subject the patient to little other inconvenience than what results from its size. At times, the skin, from being pale, smooth, and shining, becomes rough, hard, thickened, and covered with scaly incrustations of various thickness: it afterwards cracks in all directions; deep and painful fissures occur, and the lymphatic glands may inflame, suppurate, and even mortify.

When the affected part is examined after death, the derma is found greatly thickened,—sometimes to the extent of half an inch. The hypertrophied and indurated cellular membrane contains, at times, a semi-fluid gelatiniform matter; but, most commonly, it has the appearance of a lardaceous tissue. The muscles are generally pale, softened and much extenuated. The blood-vessels and nerves, and even the bones, have likewise, been found implicated; but nothing positive has been established on this point.

**Treatment.**—In the early stages, if inflammatory irritation be present, it may be necessary to have recourse to bleeding—general or local—resting the limb, and keeping it elevated. At a subsequent period, endeavours must be made to induce a new action in the system of nutrition of the part by methodical compression, which is more likely to prove efficacious than any form of friction. In such cases, the internal and external use of iodine, pushed as far as the system will bear it, is manifestly suggested; but unfortunately, in too many cases, the disease resists the best directed efforts of art.

#### 4. FRAMBÆSIA.

SYNON. Micosis, Thymiosis, Yaws, Pian; *Fr.* Framboise; *Ger.* Pians, Erdbeerpocken, Himbeerpocken, Indianische Pocken.

This cutaneous affection,—so called from its resemblance to a raspberry,—like the one just considered, is indigenous elsewhere, and but rarely seen amongst us. The descriptions of writers in regard to it differ. It is described by M. Schedel,—who had an opportunity of witnessing a case, which fell under the care of M. Biett,—as being characterized by the evolution of small red, tuberculous tumours, which are generally distinct from each other at the summit, but are connected by the base, and are very similar in form, colour, and size, to a raspberry or mulberry. These are of varied extent, and on every part of the cutaneous surface; but they are more fre-

quently seen on the scalp, face, axilla, groins, and around the anus and organs of generation. In the case described by MM. Cazenave and Schedel, the disease occupied the whole of the front and inferior parts of the thigh, and seemed to consist less of a cluster of tumours, developed within the substance of the derma, than of the derma itself in a state of hypertrophy, and covered by a multitude of vegetations. One of the tubercles, it is affirmed, generally acquires a larger size than the others, and ultimately ulcerates, forming a foul ulcer. To this the negroes, where the disease is indigenous, usually give the name *Mama Pian*, or *Mama Yaw*.

The disease is said to be usually preceded, followed, or accompanied by more or less constitutional disturbance of a febrile character; and continues for a long period without materially affecting the general health. It is endemic in Guinea, and amongst the negroes in the West Indies. It may attack persons of all ages; but, like the eruptive diseases of this country, it commonly occurs in childhood; and, like them also, appears to attack a person but once during life. It has been affirmed to be propagated solely by the application of the matter from the surface of the wounds in those who have not previously passed through the disease; but this scarcely seems sufficient to account for its extension.

**Treatment.**—At the commencement of the disease, the treatment should be entirely antiphlogistic; but when the eruption begins to decline, a revulsive management, similar to that recommended internally in lupus, becomes necessary—as the various preparations of iodine, arsenic or mercury—singly or combined. The troublesome ulcerations, that succeed, may require the employment of caustics or even of the actual cautery.

##### 5. MOLLUSCUM.

SYNON. *Ger.* Schwammgeschwulst.

Although this affection,—so called in consequence of its resemblance to certain molluscous animals,—has been classed by some dermatologists amongst the *tubercula*, it is not admitted there by others; and, owing to the rarity of the morbid condition, accurate notions of it are not yet entertained. It consists of numerous tumours, varying in size from that of a pea to that of a pigeon's egg, filled with an atheromatous matter, which are developed in the substance of the cutis; and are of various shapes,—some round or flattened, and having a large base; others adherent by means of a pedicle.

Simple molluscum appears to be wholly local, and to be unmodified by any special condition of the general system. It does not inflame, and is apt to remain stationary through life, after having attained a certain degree of development. A more singular variety is that described under the name *Molluscum contagiosum*; cases of which have been given by different observers. Although admitted as a variety of molluscum, it differs essentially from the non-contagious form; and has been considered to consist of a morbid enlargement, and derangement of the sebaceous follicles, rather than of a tubercular affection of the proper texture of the cutis vera.

*Molluscum contagiosum* is described as characterized by the presence of hard, round tubercles, which are smooth and transparent, and, when pressed, pour out from an orifice on their summits a little opaque or milky fluid. The affection is uncommon. Several of the most experienced dermatologists have never met with it. In the cases that have been related, there has been evidence of its communicability. An infant at the breast, which had the disease on its face, communicated it to the breasts of its mother; and to two other members of the family, in whom it appeared on the hands. The child itself seemed to have caught it from a brother, who contracted it from a boy at school. This variety is accompanied by tumefaction of the glands, and occasionally by so much constitutional irritation as to gradually destroy the patient.

**Treatment.**—The causes of molluscum are wholly unknown; and the treatment is unsatisfactory. In the majority of cases, the disease remains stationary in spite of all remedies. In one case, in which the tubercles occurred in great numbers on the anterior part of the neck of a young woman after delivery, a strong lotion of sulphate of copper, applied repeatedly during the day, appeared to M. Bielt to be of essential service. In the contagious variety, arsenic—in the form of *Fowler's solution*—has been advised. The cases seem to be such as to require the internal revellents, recommended under the affections last described. The external management consists in the employment of measures that are calculated to excite the tubercles to inflammation. This has been effected by touching them with caustic potassa, and the earlier this is done in the progress of each the better. It has likewise been suggested, that a fine point of nitrate of silver introduced into the aperture would effect the same object. A recent writer, Dr. R. Paterson, is inclined to look upon internal remedies, in general, as too tedious, “when the local ones can be applied with so little pain to the patient, such surety to the destruction of the tumour, and in so much shorter a space of time.”

CANCER OF THE CANCEROUS TUBERCLE of the skin, is so essentially surgical as not to require examination here. It is, moreover, only one of the phenomena of the CANCEROUS CACHEXY. Similar remarks apply to the FURUNCULAR AFFECTIONS OF THE SKIN, comprising *Furunculus* and *Anthrax*. They implicate the cellular membrane also, and are universally classed in the domain of Surgery, although treated of by certain writers on Diseases of the Skin.

### VIII. MACULÆ.

SYNON. *Dischroa*, Discoloured states of the Skin; *Fr.* Taches; *Ger.* Flecken.

Discolorations are induced by some modified action of the vessels that secrete the colouring matter of the skin. In cases of severe disease, the appearance of the whole surface is affected, so that, at times, a state of *achroa* or want of colour is induced, which is the condition in many chronic maladies. In other affections, a sallow or livid tint prevails, especially where a cancerous *vice* exists; but these are not the conditions, which fall under *Maculæ*. The term is applied to discolorations which are more or less circumscribed, and

not necessarily accompanied by any elevation of the surface; and the affections, classed under this head, are *Lentigo*, *Chloasma*, *Nævus*, and *Argyria*.

### 1. LENTIGO.

SYNON. *Ephelis lentiformis*, *Ephelides*, *Vitilignes*, *Phaci*, *Maculæ solares*, *Pannus lenticularis*, *Freckle*; *Fr.* Taches de rousseur, *Ephérides*; *Ger.* Sommerflecken, Sommerprossen.

This eruption, commonly known under the name of *freckle*, is familiar to every one. It consists of small, rounded, brownish-yellow coloured stains, which appear upon the face, neck, hands, &c.—rarely occurring on parts that are covered. They are almost peculiar to fair and florid complexions, and especially to those whose hair is red in any of its shades. They are most abundant in childhood and youth, and appear to be owing to accumulations of the colouring matter of the skin; for the cutis vera seems to be entirely unaffected. These accumulations are evidently owing to exposure to light and heat.

**Treatment.**—The prophylactic treatment consists in defending the surface as much as possible from too vivid a glare of light. When freckles have once occurred they are not easily removed. Milk and water, alcohol and water, *liquor potassæ* largely diluted, and nitromuriatic acid diluted, have been used, as well as Cologne water, Florida water, and various other cosmetics; but they generally fail.

### 2. CHLOASMA.

SYNON. *Maculæ hepaticæ*, *Pannus hepaticus*, *Liverspots*; *Fr.* Taches hépatiques; *Ger.* Leberflecke, Pigmentflecken.

This affection is essentially like the one just described; indeed, the term *epheles* has been applied to it also. It is characterized by one or more broad irregular-shaped patches, usually of a lighter or darker shade of yellow, or yellowish-brown, and occurring most commonly on the front of the neck, breast, abdomen, groins, and inner surface of the thighs. The patches are at first distinct; but they frequently spread until they coalesce, and form a large discoloured blotch. They do not generally rise above the surface; are accompanied with more or less itching; and, sooner or later, there is, at times, slight cuticular desquamation. Occasionally, the blotches are very evanescent, not lasting longer than a few hours; but, at other times, they continue for a few days. The evanescent form, according to MM. Cazenave and Schedel, is commonly seen in females about the menstrual period, and during pregnancy. At times, the affection lasts for weeks and months, without there being any sign whatever of constitutional disturbance.

The causes of this altered condition of the chromatogenous apparatus of the skin are not easily appreciable. From what has been said, it is obviously connected with certain states of the system—as menstruation and pregnancy; yet it occurs without our being able to assign any sufficient cause for it.

**Treatment.**—Chloasma generally disappears very readily by the use of sulphur, either administered internally, (gr. xv. morning and

evening, in milk,) or externally. A good lotion for this purpose is the following:—

R.—Potass. sulphuret. ℥j.  
Aquæ Oij.—M.

The occasional application of this will often relieve the very troublesome itching. Should the affection be obstinate, it may be removed by a visit to the sulphur waters of Virginia or elsewhere. The joint internal and external use of the waters, aided by the thorough change of the physical and moral influences surrounding the individual, will rarely fail in accomplishing a cure.

### 3. NÆVI.

SYNON. *Nævus maternus*, *Macula materna*, *Metrocelis*, Mother's mark; *Fr.* *Envie*; *Ger.* *Muttermal*.

This affection appears under two forms—one in which there is a permanent discoloration from some morbid and unaccountable modification of the rete mucosum; and the other in which the vessels of the skin are originally morbid. The *former* have received the names *nævi pigmentares*, *spili* or *moles*. They are observed on various parts of the body, and are, at times, of great extent. The dark discoloration of the face, occasionally seen, belongs to this variety. They are of no consequence; are original malformations and remain during life; so that they can scarcely be regarded as a form of cutaneous disease. The *latter*, called *nævi vasculares*, which are equally dependent upon malformation, may become of consequence, owing to their being formed of an erectile vascular tissue; and it is occasionally necessary to remove them. They then fall under the hands of the surgeon.

### 4. ARGYRIA.

SYNON. Silver stain, Oxide of silver stain.

When nitrate of silver has been taken for an uncertain time, the skin is apt to be discoloured. The surface acquires a bluish tint, which afterwards becomes of a greenish slate colour. This discoloration occurs on all parts of the surface at the same time, but is most marked on such as are habitually exposed to light—as the face and hands, where it not unfrequently assumes a more or less deep black hue. The colour is said to be curiously modified in certain parts by admixture with red; hence, in the conjunctiva and lips it presents a livid brown tint, and on the general surface it is much deepened by causes, which, under other circumstances, would produce paleness; and for the like reason the discoloration is more apparent in persons naturally pale than in those who are florid.

It has been questioned, whether the discoloration may not be the effect of disease rather than of the remedy—in cases of epilepsy, for example; and they who deny that any remedial agents can enter the circulation, are of the former opinion. So far, however, as the author knows, no case of slaty discoloration in epilepsy is recorded where the nitrate of silver had not been taken; and there can be little doubt, that the nitrate becomes decomposed by the chlorides and animal matter, and is deposited in the skin, where it undergoes the same change of

hue that the fresh oxide itself does when exposed to the air. When once the discoloration is produced, it is apt to remain unmodified through life,—the oxide appearing to be as entirely foreign to the nutritive actions of the skin as the pigments employed in tattooing. In the course of years, however, it is said to have been observed to diminish slightly.

**Treatment.**—It is questionable whether anything be advantageous, either in the way of prevention or cure. A combination of the nitrate of silver with iodine is said to prevent the discoloration; (see the author's *New Remedies*, 5th edit. p. 84, Philad. 1846), but farther observation is needed; for the discoloration is not often induced even when the nitrate has been administered largely and for a long time. Dr. Branson, of Sheffield, England, believes, that it may be obviated by care in exhibiting the medicine; and he states, that its approach may always be detected by attention to the state of the gums, on which the effects of the nitrate are first seen in the form of a blue line of the same colour as, but narrower than, that produced by lead.

#### IX. SYPHILIDES.

SYNON. Syphilida, Syphilitic eruptions; *Fr.* Dermo-syphilides, Dermatosies véroleuses.

Eruptions, assuming the elementary character of the various classes already considered, with the exception of the maculæ, are produced by the contamination of syphilis. Their main characteristics have been depicted as follows:—Exanthemata, bullæ, vesiculæ, papulæ, squamæ, or tubercula, whose base almost always has a red copper tint. The diagnosis of these eruptions is, however, by no means easy. It has been affirmed, indeed, that they require a practised eye, and long experience, as well as an attention to all the data furnished by the history of the case,—as the pre-existence of the local primary evidences of syphilis, as well as the co-existence of other venereal symptoms. They have been considered at length by certain writers on the diseases of the skin; but as they form part of the phenomena of syphilis, they properly fall also under that head, and are accordingly treated in detail in the different monographs on syphilis, as well as in special treatises like that of M. Cazenave (1843).

#### X. EPIZOA.

SYNON. Malis, Maliasmus, Parasitismus superficiei, Cutaneous vermination; *Fr.* Epizoaires; *Ger.* Schmarotzerthieren.

As a supplement to this section, it may be proper to consider the subject of cutaneous vermination, which rarely receives attention in works of this nature.

Dr. Good thus defines *Malis*:—"the cuticle or skin infested with animalcules;" and under the genus he includes *Malis Pediculi* or lousiness; *Malis Pulicis*, flea-bite; *Malis Acari*, harvest-bug bite; *Malis Filarie*, Guinea worm, and *Malis Gordii*, hairworm. The definition of *Epizoaires* by M. Grisolles is more comprehensive and appropriate. "All parasitic animals, which live on the surface of the body, or in the substance of the skin, and of the subcutaneous cellular tissue." Under this head, he includes—the itch or the disease produced by the *Acarus Scabiei*; the Guinea worm; and the insects that are developed

and live on the surface of the skin. These last, alone, require consideration here,—the others having been investigated elsewhere.

The human body is subject to two insects in this climate,—the common louse, *Pediculus humanus*; Fr. *Pou de tête*; and the crablouse, *Pediculus pubis*, *Morpio*; Fr. *Pou du Pubis*, *Morpion*,—the former of which inhabits the heads of those chiefly in whom cleanliness is not attended to; the latter, the hair about the parts of generation, and the eyebrows. Excepting in filthy individuals, the former does not multiply extensively in the adult; but is very common, and very numerous in the heads of dirty children. Both may, however, be received by the cleanly, and exist for some time before their true character is discovered. They excite great itching in parts that are covered with hair, which may lead to a suspicion of their presence; and they may be discovered by careful examination. The common louse is well known: the crablouse strikingly resembles the seed of the common carrot, and its legs have a cheliiform structure, whence its name. It is generally received by sexual intercourse with uncleanly persons.

Cases are on record in which the production of pediculi has been so rapid and extensive that no care could remove them. This cachexia—if it may be so called—has been termed *Phthiriasis*, *Morbus pedicularis*, *Prurigo pedicularis*; Fr. *Maladie pédiculaire*, *Phthiriase*; Ger. *Läusesucht*. Persons of wealth—in rare cases, fortunately—have been rendered miserable by it, and have died partly worn out by the excessive irritation induced by the parasites, but still more from the cachectic condition that gave rise to their exceeding multiplication. M. Most cites from T. Burnet (Geneva, 1678,) and Francus (Heidelberg, 1678,) that Sylla, Pherecydes, Ennius, Antiochus, Maximian, Herodes, Philip the Second of Spain, and Plato died of this loathsome disease; and it was universally asserted, some years ago, that the life of a British nobleman, now no more, was rendered insupportable by it.

Cleanliness—as the author has elsewhere remarked—(*General Therapeutics and Mat. Med.* 3d edit. ii. 421, Philad. 1846), is the best anti-parasitic where but few pediculi exist. The hair should be cut short; be frequently combed, and well washed with soap and water, or with an alkaline solution; but should they still resist, any of the special anti-parasitics may be employed—as the red oxide of mercury mixed with ten or twenty parts of hair powder, or in the form of the unguentum hydrargyri oxidii rubri; or the ammoniated mercury, in the form of the unguentum hydrargyri ammoniati, or mixed with hair powder in the same proportion as the red oxide; the unguentum hydrargyri, or the hydrargyri chloridum mite mixed with hair powder; but it must be borne in mind, that most of these mercurials may salivate. The unguentum veratri is used for the same purpose, as well as a decoction of tobacco; a powder or ointment of the cocculus; or an infusion or ointment of staphisagria;—but these agents are rank poisons, and must be used with caution.

In the Antilles and South America, dirty negroes, especially, are infested with a variety of pulex:—the *Pulex penetrans*; Fr. *Puce pénétrante*, *Chique*, *Chigoe* or *Chiggre*. The female commonly introduces itself under the nail, or the skin of the heel; exciting, at first, slight

itching, the punctured place being marked by a blackish spot. Soon, however, a tumour forms, containing a sanious pus, and white corpuscles, which are the ova of the insect. From opening these tumours, caries of the bones of the foot and gangrene are said to have resulted. The treatment consists in removing the extraneous matters. The skin is punctured by a pin or needle, the sac is exposed and turned out, without being opened. The wound is then dressed with tobacco, calomel, or some other antiparasitic.

Different species of *Acaridiæ* penetrate the skin, and at times give rise to swelling and suppuration, which do not cease until they are withdrawn. Dr. Turnbull, of Philadelphia, recently brought to the author an *Ixoides* which had been received, probably in the woods, penetrated the scalp, and excited inflammation and suppuration. These epizoa, occasionally acquire an unusual magnitude in their new situations, and require to be removed by the knife of the surgeon.



## CHAPTER VI.

### DISEASES OF THE FAT ORGANS.

It has long been a matter of dispute, as to what is the precise organ that secretes the fat. According to modern histologists, it originates in special fat cells, which have no aperture; and from which it can be taken up again into the system when necessary, but in a manner unknown. In the arrangement of the fat in the vesicles, as well as in its uses, there is a striking analogy between it and the starch of vegetables. Fat is a nonazoted substance; and, according to the school of Giessen, is not inservient to the nutrition of the tissues,—a view, however, by no means established, and, in the author's opinion, not probable,—seeing that the chyle of the chyloferous vessels contains much more fat near the origin of those vessels, and that the amount of the fat disappears as that of the protein compounds—fibrin and albumen—increases. Its arrangement, as well as its quantity, in different parts of the body varies. It is always found in the orbit, on the sole of the foot, and at the extremities of the fingers and toes. The subcutaneous cellular tissue, and that covering the heart, kidneys, &c. also generally contain it; but it is never met with in the eyelids, scrotum, or within the cranium.

The only morbid condition of the adipose tissue, which requires mention, is the increase that constitutes obesity.

#### OBESITY.

SYNON. *Obesitas, O. morbosa, Polysarcia adiposa, Polypionia, Adiparia, Pimelosis nimia, Hyperpimele, Liposis, Adiposis; Fr. Obésité, Embonpoint excessif; Ger. Fettsucht, Fettheit, Krankhafte Fettleibigkeit.*

It may not be an easy matter to define what amount of obesity shall be regarded as overstepping the limits of health. It has been supposed, that in an adult male, of moderate size, it forms one twentieth of the whole weight; but this can only be regarded as an approximation, and can lead to no useful mode of estimating it when excessive. The definition given of morbid obesity by Dr. Copland is—"an accumulation of fat under the integuments, or in the abdomen, or in both situations, to such an amount as to embarrass the several voluntary functions." It would be better to say, that whenever the fat accumulates to such a degree as to interfere with any of the normal acts of the economy, it constitutes a morbid condition.

Accumulations of fat may be local or general. Of the former, singular examples are met with in the healthy condition, in certain varieties of the human family—as in the Bosjesman female, in whom vast masses of fat accumulate on the nates, which give them a most extraordinary appearance. A variety of sheep, too, *ovis steatopyga*, of Asia, exhibits the same normal accumulation. At times, however, adipous depositions take place locally, which, according to the definition given above, cannot be regarded healthy. In the omentum, these are most

frequently observed, giving occasion to the deformity, as it must be regarded, of *pot-belly*, which may be to such an extent as to interfere with the flexion of the trunk forwards, even when it does not disturb the functions of the viscera of the abdomen. Occasionally, too, the deposition of fat in the mammæ is enormous; and that which is deposited on the heart at times, and gives occasion to serious phenomena, is essentially morbid, and has been described under another head.

Where the obesity is general, the amount of fat is sometimes excessive. Elsewhere (*Human Physiology*, 6th edit., ii., 256, Philad., 1846,) the author has referred to several recorded examples, some of which are sufficiently well known—that of Daniel Lambert, for example, who weighed seven hundred and thirty-nine pounds a little before his death, which occurred in the fortieth year of his age. Dr. Gross says he saw a “Canadian giant”—as he was termed—in 1829, who weighed six hundred and eighteen pounds. The deposition of fat in his case was chiefly confined to the abdomen and lower limbs,—the thorax, shoulders and arms being little larger than in other persons; and in March, 1847, an Ohio girl was exhibited in Philadelphia, who, at twelve years of age, weighed three hundred and thirty pounds.

In these cases of excessive deposition, all the voluntary and some of the mixed and even involuntary functions may be materially interfered with. Exercise of the body or of any of its parts becomes difficult; respiration short and embarrassed, and the circulation often impeded, so that the return of blood to the heart is not easy. Such a condition Dr. Copland properly esteems asthenic; and he states, that should intercurrent, visceral, or internal disease arise, it often pursues a rapid and unfavourable course; and the inexperienced practitioner, misled by the fatness and apparent vascular fulness of the patient, may be induced to take away a part of the already deficient blood. “I have,” he adds, “on several occasions, met with such occurrences, the remarkable deficiency of blood being evinced, on dissection after death, by the blanched state of the viscera and structures. In all cases of asthenic obesity, lowering or depletory measures are not well endured, even in the treatment of acute diseases affecting subjects thus circumstanced; or if at all adopted, they should be aided by derivative and restorative means.” It must be borne in mind, however, that obesity is only of this asthenic character when the organic functions are materially interfered with. Where they do not suffer from the unusual fatty deposit,—respiration and circulation going on as in health, and the muscles firm and active, a true sthenic state may be present, which may demand more energetic treatment on the super-vention of any internal phlegmasia.

**Causes.**—A tendency to obesity appears to be implanted in organization, and hence it is occasionally observed to affect a whole family when the members of it attain a certain age. At times, the deposition, at a very early age, is enormous; and in rare, very rare, instances, it gradually disappears, and does not return. M. Raige-Delorme cites the case of a child, who, at the age of from twelve to fifteen months, was so fat, that his respiration became so short and precipitate, that he

appeared to be incessantly threatened with suffocation. He attained, however, the age of two years and a half without experiencing any accidents, when he became cured of his infirmity, and was not distinguishable from other children of his age, unless it was by his light and lank figure.

Usually, obesity does not commence until from thirty to forty years of age, and, at times, still later; but in the cases of excessive fatness on record, the disposition was generally exhibited from a very early age. Ordinary obesity is seen more especially in those who lead an inactive life; and hence is more frequently observed in the rich inhabitant of the city, who lives without care, than in the more frugal resident of the country, freely exposed, as he commonly is, to the open air and to rural exercise. In like manner, some occupations dispose to it more than others; and as a general rule, those that require the least mental and corporeal exertion. For the same reason, the officers, and even the privates of cavalry regiments are more frequently fat than the foot soldiers. Cold and moist climates are said to be most favourable to it; hence it is said to be more frequent in Holland, England, Egypt, and Italy, than anywhere else; but farther statistics, as regards the influence of climate, are needed; and especially as regards those oriental countries, in which the custom is to fatten their women.

In domestic economy, we have the means of appreciating the circumstances most favourable to obesity. Fatty aliments, freed from light,—with which view the ancients were in the habit of stitching up the eyes of the fowls they were fattening for the market,—absence of excitement of every kind, and perfect repose, are the main agents invoked for this purpose. It can be understood, also, that castration or spaying, by obviating one mode of excitement, may conduce to the same end; and that after the ovaries have ceased their ordinary normal functions, or have been in a morbid condition, so that the female is sterile, the same result may ensue. It has been said, that the loss of a limb has the same effect; but the author has had no reason to believe that such is the fact.

In regard to the kind of aliments which produce the most fat, there can be little doubt that the nonazoted—as fat itself, and starch and sugar—can be more readily converted than substances that contain azote. It is generally supposed by those who adopt the views of Liebig, that azoted substances—protein compounds, for example—go to the formation of tissue—organized tissue; but that fat is never formed from them: great doubts may, however, be entertained on this head; for as animal and *a fortiori* vegetable food has to be reduced into blood, the organic actions must be quite as complex as those by which fatty matter is formed from the blood. In the view of Liebig, the abnormal condition which causes an undue deposition of fat in the animal body depends on a disproportion between the quantity of carbon in the food and that of the oxygen absorbed by the skin and lungs. In the normal condition, the quantity of carbon given out is exactly equal to that which is taken in with the food, and the body experiences no increase of weight from the accumulation of substances containing much carbon and no azote; but if the supply of highly carbonized

food be increased, then the normal state can only be preserved by exercise and labour, through which the waste of the body is increased, and the supply of oxygen accumulated in the same proportion. The production of fat, he maintains, is always a consequence of a deficient supply of oxygen, for oxygen is absolutely indispensable for the dissipation of the excess of carbon in the food. "This excess of carbon, deposited in the form of fat," he remarks, "is never seen in the Bedouin or in the Arab of the desert, who exhibits, with pride, to the traveller, his lean, muscular, sinewy limbs, altogether free from fat; but in prisons and jails it appears as a puffiness in the inmates, fed as they are, on a poor and scanty diet: it appears in the sedentary females of oriental countries, and finally it is produced under the well-known conditions of fattening of domestic animals."

Whether the view of Liebig be admitted or not, it is certain that the circumstances which favour obesity are,—absence of activity and excitement of all kinds; and that nonazoted aliments appear to be especially favourable for its deposition. There is a great diversity, however, in individuals, as regards the tendency to the normal production of fat. Although placed under circumstances most favourable to its increased deposition, some persons continue lean; whilst others become fat in spite of every precaution.

**Treatment.**—A consideration of the causes of obesity will suggest the appropriate treatment. It subjects the individual, however, to much privation, and, consequently, it is difficult to continue it for the proper length of time. It is obvious that attention to hygiene is more required than to therapeutics, and that moderation in diet is of greater importance than any selection in regard to quality. Either animal or vegetable food that is nitrogenized may be allowed in small quantity; for it is preferable to the nonnitrogenized,—as fat, sugar, starch, &c., which, as already remarked, is probably more readily converted into fatty matter, than food, which, in addition to carbon, hydrogen, and oxygen—the constituents of fat—contains also azote, which has to be got rid of. Active exercise, is also of the utmost importance, whether the view of Liebig be embraced or not. It is certain, that the deposition of fat is prevented by it. Of the different forms of exercise, that on foot is the best, and next to this riding on a hard-trotting horse, or in a carriage without springs, over rough pavements or roads, especially before breakfast. The sleep should be as short as practicable, and the *siesta* after dinner be avoided, or be of brief duration. M. Grisolle advises, that all the evacuations should be excited, "and especially the cutaneous transpiration, the alvine discharges, the urine and the sperm;"! but care must be taken, that injury is not done by the use of disturbing agents, and especially that the sthenic and asthenic forms of obesity are discriminated. In the former, hunger will be well borne, and if the patient submit to it for a while, it will be more readily endured afterwards. Acids, alkalies, and soap have been advised to reduce and prevent corpulency; and it is said, that vinegar and cream of tartar are frequently and habitually taken by ladies for this purpose. It is not easy to see, however, how these agents can produce their effect without danger to the integrity of the digestive or urinary organs

or both. Of their precise effect in the prevention or cure of obesity, the author knows nothing from observation. The preparations of iodine would suggest themselves as likely to be advantageous; but, after all, the great modifying influences must consist in carrying into effect the hygienic inculcations given above.

In cases of partial obesity, methodical compression will afford relief, and favour the absorption of the fatty deposit.

## B O O K V.

### DISEASES OF THE LYMPHATICS AND GLANDIFORM GANGLIONS.

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THE lymphatic vessels are the agents by which interstitial absorption is effected. Into them are received the materials of the broken-down tissues, so that they are constantly conveying into the mass of blood matters that are to serve again for nutrition. The lacteals are in reality the lymphatics of the intestines, and when the preparation of chyle is not going on, they contain the same fluid as that which is in the lymphatics in general. Neither set of vessels has open mouths:—absorption is, therefore, accomplished by cell agency, as described elsewhere, (*Human Physiology*, 6th edit. i. 631, Philada. 1846). All pass through glandiform ganglions,—termed “lymphatic ganglions or glands” when on the lymphatics in general,—“mesenteric ganglions or glands” when on the chyloferous vessels; and, through the thoracic duct, the contents of the chyloferous vessels and of the lymphatics of the lower extremities are poured into the venous system. The two great trunks, indeed, of the lymphatic system, in which the lymphatics of the various parts of the body terminate, are the thoracic duct, and the great lymphatic duct of the right side. They exist in almost all parts of the body, and consist of two planes, the one superficial, the other deep-seated.

The lymphatic ganglions are destined to effect some change on the fluid contained in those vessels; but in what this change consists is not clear. The same obscurity—it will be seen—rests on the changes effected by the lymphatic ganglions; and the same difference of sentiment in regard to their anatomical conformation.

It would not seem, that the influence of the lymphatics on the production of disease is great. Connected as they are with the great work of nutrition in various parts of the body, it might seem that they would be liable to varied derangements, and that these derangements would often induce disorder in the whole system; but fortunately such is not the fact. They themselves are rarely diseased organically. M. Andral examined the thoracic duct, and the principal lymphatic vessels in upwards of six hundred cases, and found in very few instances any appreciable alteration in the coats of these vessels.

The terms—*glandiform ganglions*, *adenoid* and *vascular ganglions*, *blind glands*, *aporic glands*, *glandulæ spuriae*, &c., have been given to certain organs, which resemble the glands in many of their characters,

and yet differ widely from them in others. These organs are the spleen, the thyroid, and thymus glands, the suprarenal capsules, and the lymphatic ganglions or glands, commonly so called. All these bodies are considered, by most pathologists, to be mediately or immediately connected with the circulation of the blood and lymph. They differ from the glands in having no excretory ducts. They are formed of modified cellular tissue, blood-vessels, lymphatics, and nerves,—the whole enclosed in a cellular sheath, which sends prolongations internally. They are all situate in the course of the lymphatic or venous circulation, and appear to exert some action on the absorbed matters, to fit them for conversion into blood. Some of them, indeed,—as the spleen, thyroid, and thymus,—have been conceived to act as diverticula to the blood under particular circumstances, and consequently to form more immediately a part of the sanguiferous system; hence their diseases have occasionally been treated of under the diseases of the circulatory apparatus. The glands, on the other hand, are formed of ramified prolongations of mucous membrane, of blood-vessels, lymphatics, and nerves; the whole aggregated and enveloped by cellular tissue. They are placed at the confines of the arterial circulation, and appear to be concerned in the depuration of the blood. Hence—as has been well remarked by M. Béclard—the *vascular ganglions*, which are organs of absorption and assimilation, ought not to be confounded with *glands*, which are organs of depuration and excretion—their functions being of an opposite character.

The diseases of some of those bodies are obscure and unimportant, and will, therefore, demand little or no attention.

## CHAPTER I.

### DISEASES OF THE LYMPHATICS AND LYMPHATIC GANGLIONS.

#### I. INFLAMMATION OF THE LYMPHATICS.

**SYNON.** *Inflammatiō vasorum lymphaticorum, Angeioleucitis, Lymphangeitis, Lymphangioitis, Hydrangeitis, Lymphitis, Lymphatitis; Fr. Inflammation des vaisseaux lymphatiques, I. des tissus blancs; Ger. Entzündung der Lymphgefäße, Lymphgefässentzündung.*

**INFLAMMATION** of the lymphatics is by no means of rare occurrence, especially as the result of external injury. It has been observed in many parts of the body; is, doubtless, concerned in the production of phlegmasia dolens; and has been seen in the great splanchnic cavities. M. Andral, in a patient who had died of phthisis, saw the superficial lymphatics of the lung presenting traces of inflammation; and, in intestinal ulcerations, the lymphatics communicating with the mesenteric ganglions have presented the same appearances. In two cases, the thoracic duct was seen by M. Andral to be inflamed; and MM. Gendrin and Tonnellé have met with some cases succeeding to metropéritonitis, complicated with inflammation of the lymphatics.

The affection is most frequent, however, in the lymphatics of the extremities or of the surface of the body.

**Diagnosis.**—When the inflammation affects the superficial lymphatics, a burning pain, increased on pressure, is felt along the course of a lymphatic trunk or trunks, accompanied by more or less vivid redness, occasionally in the form of striæ or bars, or of simple patches, which are sometimes irregular and tortuous, circumscribing islets of healthy skin. These phenomena generally set out from some wound or lesion, and they may be traced from their point of departure towards the lymphatic ganglions that are situate between it and the heart; and these last are, generally, more or less painful to the touch, and swollen. It is not uncommon, however, for the first redness to be observed at some distance from the lesion. At times, the redness diffuses itself, so as to present the characters of ordinary erysipelas. If the inflammation affects, in the first place, the deeper layer of lymphatics, attention is drawn to it by the pain felt in the part, which is deep-seated, pungent, or lancinating; and if the region be pressed upon with the finger, painful indurated points are discovered, which ultimately project on the surface, and frequently occasion an œdematous tumefaction of the part.

The local phenomena may, or may not, be preceded by rigors; but usually, in the inflammation of the lymphatics that follows a wound, unless that wound be poisonous, there will be the ordinary symptoms of irritative fever,—as chilliness, followed by heat of skin, anorexia, vomiting, &c. In these sthenic cases, as they may be termed, which are the most common, should suppuration even be established, the pus is not often carried into the venous system so as to infect the blood;—the lymphatic ganglions—it has been conceived—which are themselves inflamed, effectually preventing such transmission. When it does occur, it is more slowly than in phlebitis, excepting in the case of



poisonous matter, as in wounds received in dissection, where the ataxic and adynamic phenomena, presented by the absorption of purulent matter, exhibit themselves speedily, and no appreciable inflammation of the veins may be detected on dissection.

When the lymphatics of the splanchnic cavities are inflamed, or the great lymphatic trunk—the thoracic duct—the symptoms are exceedingly obscure, and can lead to no certain diagnosis. Generally, the disease, when it affects the superficial lymphatics, terminates by resolution, and, when a small number of vessels is implicated, in a few days. In other cases, especially in scrofulous or malignant diseases, it may assume a chronic form. Where suppuration ensues, the pus may, as in erysipelas, be infiltrated, or in collections of greater or less amount.

**Pathological Characters.**—Inflamed lymphatics have the appearance of white or reddish knotty cords of unequal size, which are generally distended with purulent matter. The inner coat is at times lined with a false membrane; and the parietes of the vessels exhibit the redness, increased thickness, induration or softening that are the results of vascular inflammation in general. At times, the channel is obliterated by effused fibrin, or by adhesion of the opposite portions of the inner coat to each other. In a great number of cases, pus is present in the lymphatics without any manifest lesion in their parietes. This has been especially observed as regards the lymphatics of the uterus and pelvis of women who have died of puerperal fever. In such cases, the pus could scarcely have been the product of angiolecitis, but must have entered the vessels. Metastatic abscesses are not common where the disease has not been produced by septic poisons, or in cachectic individuals. M. Velpeau has, however, observed many of them of a small size, several times, in the lungs and liver.

**Causes.**—The main exciting causes are wounds of the surface, especially punctured wounds, when irritated, or caused by a dirty or rusty instrument; by the bites of animals, &c., &c. Punctures or cuts received on dissection are frequent causes; and not rarely attended with fatal consequences. In such cases, however, the condition of the patient's constitution has much to do in the way of predisposition. It has been a common remark in the large cities of Europe, that when young men first arrive in them to prosecute their anatomical researches, they are fortified and suffer less from wounds received in dissection, than after they have resided some time in the impure air of the city and of the amphitheatres, and their forces have been impaired, so that they are not adapted for resisting so well the septic agency.

**Treatment.**—This must be essentially the same as in INFLAMMATION OF THE VEINS, and need not therefore be repeated.

## II. INFLAMMATION OF THE LYMPHATIC GANGLIONS.

SYNON. *Inflammatio glandularum lymphaticarum, Lymphadenitis, Adenitis lymphatica; Fr. Adénite lymphatique, Inflammation des ganglions lymphatiques, Adénite des ganglions lymphatiques; Ger. Lymphdrüsenentzündung, Entzündung der Lymphdrüsen.*

Inflammation of the lymphatic ganglions is much more common than that of the lymphatic vessels. It is an accompaniment of the

latter when it spreads; but much more frequently the ganglions inflame without there being any evidences of inflammation of the vessels. The swelling that forms a part of it is rapid, prominent, and very painful; the pains being constant and lancinating. The swelling is hard; and exceedingly tender to the touch, as the skin covering the ganglion speedily participates in the inflammation.

The inflammation may end in resolution, or pass on to suppuration. It rarely terminates in gangrene; but induration and chronic indolent tumefaction is not an uncommon sequela. The general prognosis of simple inflammation of the lymphatic ganglia of the surface of the body is favourable. Of course, where it is symptomatic of other maladies, or of unhealthy conditions of the system, the prognosis merges in that which appertains to such conditions.

**Causes.**—Inflammation of the lymphatic ganglions is almost always symptomatic of some injury implicating a lymphatic or lymphatics passing through them. Hence it is, that those of the groin may become implicated, when local inflammation or external injury affects the foot or lower extremity; and those of the axilla where the upper extremity is concerned. A bubo in the groin is a common result of a syphilitic sore on the male organ or on the genitals of the female: and eruptions on the head occasion swelling of the ganglions of the neck. In a case of this last kind the author was consulted, when the ganglionitis had terminated in gangrene, which speedily induced death. It was one of the few cases, which he has seen of such a termination. In like manner, enteritis of the mucous coat becomes the source of mesenteric ganglionitis—as will be seen presently; and we can understand why ulceration of the patches of Peyer in typhoid fever should be accompanied by the same condition of the mesenteric ganglions. Occasionally, however, the inflammation of the ganglions occurs primarily or without any evident local cause; and in plague it appears as one of the phenomena of that formidable malady.

**Pathological Characters.**—In the early stage of violent inflammation, the substance of the ganglion is swollen, of a reddish or reddish-brown colour; moist and friable; and at times it becomes softened in a high degree. If inflammation has proceeded to suppuration, pus will be found infiltrated or collected in one or more abscesses. If the inflammation has been slight, the ganglion may be dense, homogeneous, not readily torn, and resemble somewhat, in appearance, the substance of the heart. If in this state a section be made of it, a number of minute red or brown points is observed, which indicate the extremities of small vessels in a state of hyperæmia, and occasionally there are small effusions of blood, which, according to M. Gendrin, are on the outside of the cells of the ganglion, and occupy only the intermediate cellular tissue.

**Treatment.**—In active simple inflammation of the lymphatic ganglions of the surface, the treatment is that which belongs to external inflammation in general, modified according to the powers of the individual. The subacute form may, at times, be arrested in the forming stage; and occasionally the pus may be absorbed in the suppurative stage by the application of a blister. M. Grisolle affirms, that in

neither case have blisters appeared to him to be of any advantage; but such has not been the experience of the author, and of many others. The same effect may be induced by painting over the surface with the tincture of iodine, so as to desiccate and discolour the integument,—at the same time inculcating rest and a proper position, and enforcing the general antiphlogistic treatment and regimen.

Where a glandular inflammation remains indolent, and neither recedes nor advances, an active blister will frequently either cause it to recede, or to advance to suppuration.

In indolent tumefactions or chronic indurations nothing is so advisable as the preparations of iodine employed both internally and externally, with methodical compression, as advised under SCROPHULOUS CACHEXIA; for it is in such a condition of the constitution, that chronic glandular enlargements are most frequently seen. Of course, where the inflammation of the lymphatics is altogether symptomatic, the main attention must be paid to the primary disease, otherwise the local treatment will be of but little avail.

When the inflammation has terminated in suppuration, the pus must be evacuated as soon as it can be felt distinctly.

Of the inflammation of internal lymphatic ganglions, that of the ganglions of the mesentery alone merits a distinct consideration.

#### I. INFLAMMATION OF THE MESENTERIC GANGLIONS.

##### a. *Simple Inflammation of the Mesenteric Ganglions.*

SYNON. Adenitis mesenterica, Mesenteric Ganglionitis; Ger. Entzündung der Chylusdrüsen.

The mesenteric glands or ganglions are a part of the absorbent system, and hold the same ratio to the chyliiferous or lymphatic vessels of the intestines, that the lymphatic ganglions of the axilla and groin hold to the lymphatics of the upper and lower extremities. In them, the lymphatic vessels of the intestines terminate; and the chyliiferous vessels traverse them in their course from the intestines to the thoracic duct. In health, their substance is of a pale rosy hue, and their consistence moderate. By pressure, a transparent and inodorous fluid can be forced from them. Difference of opinion exists as to their structure. According to some, they consist, essentially, of a pellet of chyliiferous vessels, folded a thousand times upon each other, subdividing, and anastomosing almost *ad infinitum*, united by cellular tissue, and receiving a number of blood-vessels. In the opinion of others, again, cells exist in their interior, into which the afferent chyliiferous vessels open, and whence the efferent vessels set out; these cells being filled with a milky fluid, carried thither by the lacteals, or exhaled by the blood-vessels. It is the general view of physiologists, that these ganglions impress changes on the chyle in its passage through them, and animalize it, or serve to transform it into the nature of the being to be nourished. This is supposed by some to be produced by the fluid exhaled into their cells. Others consider, that the veins of the glands remove from the chyle everything that is noxious,—or purify it. Howsoever effected, it would seem that they impress important changes on the chyle; as its rosy colour is more marked on the thoracic, than on the intestinal side of the glands, and it is richer

in protein constituents after having traversed them. Such being the case, it can be understood, that disease of these bodies must interfere with the important process of animalization, and may give occasion to the impaired nutrition, which characterizes their state of inflammation. In two ways, such inflammation may act. In the *first* place, it may interfere with the animalization of the chyle; and in the *second*, it may prevent the course of the chyle through the chyloferous vessels towards the thoracic duct.

Simple inflammation of these ganglions appears to be by no means a common affection. If, however, prolonged irritation should exist in the mucous membrane of the intestine, they may become inflamed in the same manner as the lymphatic ganglions in the axilla and groin are inflamed from sources of irritation seated in the upper or lower extremities. The connexion, too, of this affection with an inflamed state of the intestines, or with gastro-enteritis, has been long pointed out; and hence, in the description of the anatomical characters of different fevers, an altered condition of the mesenteric glands will usually be found, where there were, at the same time, diseased appearances in the intestinal mucous membrane. On this point, most recent authors are in accordance. It is not equally settled, whether the same condition of the ganglions may not be induced by inflammation of the peritoneum. M. Broussais lays down the proposition, that "the mesenteric ganglions do not inflame from simple peritonitis;"—this fact, he says, he has observed in a vast number of cases. He states, that in engorgements of the cellular tissue of the mesentery and omentum, subsequent to chronic peritonitis, we find tuberculous ganglions in the midst of lardaceous muscles, and fibrous, scirrhus, encephaloid or melanosed tissues; but, he adds, that if the mucous membrane of the small intestines be closely examined, ulceration or some other trace of enteritis will generally be found. In another work, the same writer is bolder, and less justified in his generalizations. "These small parenchymatous bodies,"—he observes—"are endowed with great vitality, and whilst it is impossible to discover any sympathy between the lacteal vessels and the rest of the body, we observe very active sympathies between the mesenteric ganglions, and the gastro-intestinal mucous surface. This discovery belongs likewise to the physiological doctrine, which has shown that all gastro-enterites are accompanied by tumefaction of the mesenteric glands. Although chyle may be charged with acrid, irritating, or even poisonous matters, they traverse the ganglions with impunity, provided they do not inflame the gastro-intestinal mucous surface. Our attention has been for a long time directed to this question, and we have not observed any instance of mesenteric ganglionitis, which had not been preceded by well-evidenced gastro-enteritis." Although, however, it may be admitted, that inflammation of the mesenteric glands is most commonly caused by irritation in the lining membrane of the intestines, it can doubtless arise independently of such irritation, in the same manner as inflammation of the lymphatic ganglions may arise spontaneously, independently of any irritation in the lymphatic vessels on the peripheral side of those ganglions.

When simple inflammation of the mesenteric ganglions exists, it cannot be diagnosticated by any special morbid phenomena. As it is so generally connected with disease of the intestinal follicles or of the mucous membrane, the symptoms that indicate these pathological conditions will alone attract the attention of the practitioner, although they may lead him to suspect the presence of disease of the ganglions.

b. *Scrophulous Inflammation of the Mesenteric Ganglions.*

SYNON. Atrophia infantum, A. glandularis, A. infantilis, A. mesenterica, Macies infantum, Pædatrophia, Scrophula mesenterica, Tabes mesenterica, T. glandularis, Scrophulous or Tubercular degeneration of the mesenteric glands or ganglions; *Fr.* Carreau, Scrofules ou Écrouelles méésentériques, Étisie méésentérique, Rachialgie méésentérique, Atrophie méésentérique, Tubercules des ganglions méésentériques, Phthisie méésentérique, Physconie méésentérique, Entero-méésentérite (*Baumes*); *Ger.* Darrsucht der Kinder.

Scrophulous inflammation of the mesenteric ganglions, and *tabes mesenterica* stand towards each other in the relation of cause and effect; yet, they are so generally associated, that the terms have been used by most writers synonymously. Originally, the French term *carreau*, ("a square tile,") was employed figuratively by authors to designate any disease, that was characterized by hardness and swelling of the abdomen, and, of course, it embraced enteritis with tumefaction of the mesenteric ganglions, scrophulosis of those ganglions, tubercular peritonitis, &c.; but, at the present day, its acceptance is restricted to the affection now under consideration.

**Diagnosis.**—Scrophulous inflammation of the mesenteric ganglions may appear under two forms, which are very distinct. It may be latent, as it were, or be attended by well-marked phenomena. Scrophulous matter may be deposited in the ganglions, and yet there may be no symptom that attracts the attention of the practitioner to them. This has been accounted for, by the assertion, that in such cases the tubercles are crude, and that it is the process of softening, which alone gives occasion to functional disorder. It would not seem, however, that this explanation is satisfactory, inasmuch as mesenteric tubercles have been seen in the most advanced stage of mollescence, without having given occasion to the least indisposition. A young girl, who enjoyed excellent health, fell into the fire, and died a few hours afterwards. On dissection, twelve mesenteric ganglions were found tuberculous, and some of them in a state of suppuration; and many similar cases have been observed by the pathological anatomist. Perhaps, the most satisfactory mode of accounting for the innocuousness of this pathological condition is the absence of any inflammatory complications of the intestine or peritoneum,—complications, which appear indeed, to give rise to the phenomena that constitute *tabes mesenterica*.

M. Guersent divides the disease into two stages, according as the ganglions can, or cannot, be felt through the parietes of the abdomen. In the *first stage*, the main symptoms are:—increased size of the abdomen; emaciation; puffiness and paleness of countenance; at times, loss of appetite, but more commonly, great voraciousness and insatiable appetite; vomiting of glairy matter, and uneasiness after having eaten; alternation of constipation and diarrhœa; alvine

evacuations of a gray colour resembling clay; and, towards evening, a febrile movement with dryness of the skin. It is obvious, however, that none of these symptoms are diagnostic of the disease, and that they may all belong to simple chronic endoenteritis. In the *second stage*, the functional phenomena are of more importance. The mesenteric ganglions are now so large, that they can be felt through the parietes of the abdomen; giving the feeling of hard, round, knotted or knobbed bodies, seated deeply in the middle portion of the abdomen, and painful when pressed upon. Copious diarrhœa is now a general concomitant; and there is constant fever, with extreme emaciation. Frequently, too, there is œdema of the lower limbs; and, occasionally, accumulation of serum in the cavity of the peritoneum, and even in the chest; under which the patient gradually dies in the last stage of marasmus. Where the tuberculous masses are very large and hard, they may give occasion to serious inconvenience by pressing upon important organs. Thus, they have been known to obstruct the pylorus and the biliary ducts, the ureters, the vena cava inferior, and the vena porta,—in the last case occasioning ascites and anasarca of the lower half of the body.

It is clear, from the above detail, that the only pathognomonic symptom of tabes mesenterica is the presence of hard, knobbed, tumours, deeply seated about the middle part of the abdomen; yet these may be confounded with scybala in the intestines. Scybala, however, are generally contained in the left iliac region, and they are not painful when pressed upon; whilst the mesenteric tumours are usually seated in the umbilical and right iliac regions. Moreover, scybala are generally accompanied by constipation, whilst mesenteric ganglionitis is as commonly associated with diarrhœa. If doubts, however, should still exist, they may be dispelled by the administration of a gentle cathartic, which may remove the scybala.

In the first stage of the disease—as already remarked—there is no pathognomonic symptom.

**Causes.**—As the predisposition to this disease would appear to lie in scrophulosis or tuberculosis, it would seem, that all those causes, which have been elsewhere pointed out as favouring the development of those conditions, must equally favour the development of scrophulous inflammation of the mesenteric ganglions. It is important, too, to bear in mind the unfavourable influence of a complication with inflammation of the lining membrane of the intestines; and, therefore to avoid all such unwholesome food, as might derange the gastric and intestinal functions, and thus augment the morbid condition of the ganglions.

The disease has been considered as one of infancy exclusively; but this is not accurate. MM. Rilliet and Barthez regard the common belief as one which it is important to correct; for should it be shown, that the disease rarely attacks infants under three years of age, abdominal tumours, and general tumefaction of the abdomen in young subjects must necessarily be generally independent of mesenteric tuberculosis. The researches of these gentlemen have demonstrated, that mesenteric disease is slighter, the younger the child,—that the tuberculization attains its maximum of development between the 5th and

10th year,—and that both when severe and slight, it is very uncommon from 12 to 15 years of age. Tubercular enlargement of the mesenteric glands has been found at all ages, even in the fœtus, and in adults. In one-fourth of those who had died of phthisis, and whose bodies were examined, tubercles, according to M. Louis, were found in the mesenteric ganglions. In 100 adults, who had died of phthisis pulmonalis, they were found by another observer, M. Lombard, ten times; and in the examination of the bodies of 100 tuberculous children, thirty-one times. At the Hôpital des Enfants Malades, of Paris, in tuberculous subjects, from two to fifteen years of age, tubercles were found in the mesentery in one half. From these facts, the disease is evidently more frequent in childhood.

The common opinion is, that girls are more liable to it than boys, but this does not appear to rest upon sufficient statistical evidence. MM. Rilliet and Barthez state, that it is chiefly when “the disease is very considerable,” that the predominance of boys over girls is marked. The following table is given by them.

Of 144 children, who had mesenteric tubercles, there were—

From 1 to 2½ years . . . . .	27	}	Boys . . . . .	18
			Girls . . . . .	9
From 3 to 5½ years . . . . .	41	}	Boys . . . . .	27
			Girls . . . . .	14
From 6 to 10½ years . . . . .	55	}	Boys . . . . .	37
			Girls . . . . .	18
From 11 to 15 years . . . . .	21	}	Boys . . . . .	11
			Girls . . . . .	10
			Boys.	Girls.
Tubercles not numerous . . . . .			49	27
Tubercles tolerably numerous . . . . .			28	20
Tubercles very numerous . . . . .			16	4
			93	51

It is true as regards tuberculosis in the two sexes, that girls are more predisposed to it; but although this probably applies also to tabes mesenterica, it is not certain. The author has stated elsewhere, that although the scrophulous and the tuberculous cachexia are congenerous affections, it by no means follows, that they are identical. They may exist, however, together; and such would frequently seem to be the case with the disease under consideration. In most cases, it appears to resemble the affection of the lymphatic ganglions of the neck, so common in children, and which are unhesitatingly referred to scrophulosis.

When the disease has once become fairly established, the ganglionic affection must terminate either by the softening of the tuberculous matter, or by its transformation into a calcareous substance; the latter being the more favourable termination; but it is very rare. When the tumours soften, they may give occasion to peritonitis; or the matter may, by adhesion, be discharged into the intestines; or where the tumour is very large, adhesions may take place between it and the abdominal parietes, and the matter may be discharged through them by an ulcerative process. The danger has been regarded by some to be dependent mainly upon the diseases with which it is complicated.

M. Guersent, indeed, affirms, that he has not met with a single case in which a child died from it alone: in all the fatal cases, which he had seen, it was combined with other diseases capable in themselves of causing death.

**Pathological Characters.**—In the first period of tabes mesenterica, the mesenteric glands are red, and hypertrophied, and at times very friable, but at others indurated. Occasionally, there is no alteration whatever in their appearance. The scrophulous matter is at first disseminated in the form of white points, which gradually increase in size, and ultimately invade the whole or the greater part of the ganglions; forming rounded masses, of different sizes, which appear superposed, as it were, on the ganglions. The tubercles—if they may be so termed—go on augmenting, and may form large tumours, which have been compared to chestnuts deprived of their envelope. They have been seen of the size of a hen's egg, and even larger. As the tubercular matter is deposited, it subjects the ganglions to pressure, so that they frequently become greatly diminished in size, and at times their natural texture cannot be recognised.

In 144 cases of mesenteric tubercles noted by MM. Rilliet and Barthez, the following characters were presented.

Yellow granulations	7
Miliary tubercles	57
Tubercular masses	84
Softened tubercles	13
Cretaceous tubercles	8
Tubercles not numerous	75
———— somewhat numerous	48
———— numerous	20

In all fatal cases, evidences exist of complications of even greater importance than the primary disease itself. Almost always, there are marked evidences of inflammation, simple or tubercular, of the peritoneum, or of the mucous membrane of the intestines, or of both; and in the large mass of cases, the endo-enteritis is accompanied by inflammation and ulceration of the intestinal follicles. It would seem to rarely happen, that tubercles exist in the mesenteric ganglions alone. Commonly, the bronchial ganglions are affected, and tubercles are found in greater or less quantity in the lungs. They pass, too, through the same stages as similar formations elsewhere. They do not, however, proceed, like the pulmonary tubercles, to complete softening; and are scarcely ever transformed into liquid pus; an additional fact, which exhibits the similarity between the inflammation of the mesenteric ganglions, and that of the ordinary lymphatic ganglions, in which the pus is always mixed with a matter of a cheesy appearance.

Of the 144 cases observed by Rilliet and Barthez, in 42, the intestines had neither tubercles nor intestinal alterations; in 43, tuberculization was almost equally intense in the intestines and mesentery; in 39, the intestinal tuberculization was more considerable than that of the mesentery; and in 20, the disease of the mesentery presented a marked predominance over that of the intestines. Again,—of the 144, 65 had no intestinal phlegmasia; and in 34 of these, the mesenteric tuberculization was so little advanced, that it might be regarded as independent of inflammation of the intestine. This slight advancement



of the tuberculization of the mesentery coincided with acute lesion of the small intestine 15 times, and 3 times with chronic inflammation; 26 times with acute lesion of the large intestine; 10 times with the chronic; and 12 times the intestinal disease was seated both in the small and large intestines. Somewhat advanced tuberculization of the mesentery coincided with acute inflammation of the small intestine 5 times; with that of the large, 17 times; with its chronic inflammation 5 times, and 3 times both intestines were affected together. Very advanced tuberculization of the mesentery coincided four times with inflammation of the small intestine; six times with that of the large; with its chronic inflammation once; and in one case both intestines were affected simultaneously.

In 12 cases, both intestines were perfectly sound, and presented neither tubercles nor inflammation; and 25 times the small intestine was entirely sound, the mesentery being tuberculous.

It would appear, from all that has been said, that the danger from scrophulous inflammation of the mesenteric ganglions is mainly dependent upon the accompanying complications. When once, however, the disease has proceeded so far that the enlarged ganglions can be felt through the parietes of the abdomen,—and it is not till then, as already remarked, that we are certain of the true nature of the affection,—the prognosis must be of the most unfavourable character, inasmuch as complications will be found to be co-existent; and under the cachexia thereby developed, no expectation can be entertained, that the tubercular matter will be taken up. The generality—if not the whole—of the cases of *tabes mesenterica* said to have been cured, have probably been cases of disease resembling *tabes*, in which the symptoms accompanying the first stage were present, but the enlarged glands were not felt through the abdominal parietes.

Too much stress has been laid on unusual prominence of the abdomen as a symptom of this disease. Such prominence cannot be caused by enlargement of the mesenteric ganglions, unless when they have attained an enormous size. Moreover, the ganglions have frequently been found diseased in those who presented no particular abdominal protuberance,—and, as already remarked, they have been extensively softened, where the person has appeared to be in good health, and no ganglionic affection was suspected.

**Treatment.**—As scrophulous enlargement of the mesenteric glands, when it exists to such a degree as to be distinctly felt through the abdominal parietes, is usually fatal, in consequence of the mischief in other parts with which it is complicated, it is not necessary to dwell upon the treatment. It must be such as is adapted for the palliation of those complications. As, however, it has happened occasionally, that when the enlarged glands have been perceptible to the touch, the complications have been to a slight degree, it may be proper to adopt such a course as is advisable in scrophulosis in general, and as is laid down under *Scrophulous Cachexia*. With this view, the preparations of iodine promise the best success; but as there is frequently concomitant inflammation of the lining membrane of the intestines, it may be preferable to use them externally, rather than internally. All the

preparations of iodine are not, however, equally well adapted for external use, as some of them induce too much irritation of the skin. The iodide of lead<sup>a</sup> is not liable to these objections, and it has been employed in enlargement of the glands with gratifying success, in cases in which frictions with other preparations of iodine had been used ineffectually.

<sup>a</sup> R.—Plumbi iodid. ℥j.  
Adipis ℥j.—M.

If it be desired to administer any of the preparations of iodine internally, a solution of the iodide of potassium,<sup>b</sup> or of the ioduretted iodide of potassium;<sup>b</sup> or—what suits the scrophulous constitution better, perhaps—of the iodide of iron,<sup>c</sup> may be prescribed. A small quantity of laudanum added to each dose may prevent it from disagreeing.

<sup>a</sup> R.—Potass. iodid. ℥j.  
Aquæ destillat. f ℥j.—M.  
Dose, to a child, three or four drops, three times a day.

<sup>b</sup> R.—Iodin. ℥j.  
Potass. iodid. ℥ij.  
Aquæ destillat. f ℥vij.—M.  
Dose, to a child, two or three drops, three times a day.

<sup>c</sup> R.—Ferri iodid. ℥j.  
Aquæ destillat. f ℥j.—M.

Dose, to a child, two or three drops, three times a day.

Where there is much tenderness on pressure, and accompanying febrile irritation, it may be necessary to employ antiphlogistics, taking care not to carry them farther than is indispensable, inasmuch as they may augment the existing cachexia, which, as elsewhere shown, is one of defective nutrition, and therefore demanding rather the corroborants that are advised under Scrophulous Cachexia. The whole hygienic and therapeutical treatment, there recommended, is indeed required. It has been properly remarked, too, by M. Guersent, that in the inflammatory form of *tabes mesenterica*, the lungs have almost always been diseased for some time; and the liver, spleen, and subperitoneal cellular tissue are frequently invaded by the tubercles. "The patient is tormented by hectic fever; the *tabes* is then said to be in its third stage, and all the pretended resolute medicines would be incendiary and dangerous; they would accelerate the fatal termination. The physician is reduced to the sad office of employing the palliative treatment, which is appropriate for the last stage of *phthisis pulmonalis*, *tubercular peritonitis*, or *intestinal ulcerations*."

## CHAPTER II.

### DISEASES OF THE SPLEEN.

THE diseases of the spleen are involved in a good deal of obscurity. Where the functions of an organ are not very intelligible, it is easy to understand, that its pathology may be obscure. This is the case with the spleen. There are many phenomena, however, that reveal to us morbid conditions of this organ, which are almost always secondary or dependent upon a morbid state of other organs or functions.

The spleen—it must be borne in mind—is situate deeply in the left hypochondriac region, beneath the diaphragm, above the left kidney, and to the left of the stomach. Its position is such, that any considerable enlargement might interfere by pressure with the functions of important organs, and might impede the passage of the blood along the great vessels. It is loosely attached by folds of the peritoneum and by vessels; but in certain states of disease it becomes more firmly united by the effusion of coagulable lymph; and occasionally, but very rarely, escapes from its bonds, and moves to and fro in the cavity of the abdomen. In the very recent subject, it is of a grayish-blue colour, which, a few hours after death, changes to a purple, so that it resembles a mass of clotted blood. Its size varies materially in health, but the medium length may be estimated at about four and a half inches, and the average weight about eight ounces.

For the different views that have been entertained in regard to the functions of the spleen, the author may refer to another work, (*Human Physiology*, 6th edit. ii. 333, Philada. 1846.) The fact that it has been lost, and yet the individual has not suffered in a marked manner in any of his important functions, renders it extremely difficult to arrive at any theory regarding its precise offices. Of forty dogs, operated upon on the same day by M. Dupuytren, by removing their spleens, without tying any vessel, but merely stitching up the abdominal wound, none were attacked with hemorrhage. Half the dogs died within the first eight days from abdominal inflammation; the other half got well without any accident at the end of three weeks at the farthest. At first, they manifested a voracious appetite, but this soon passed off. They fed on the same aliment as before, and the same drinks, took the same quantity of aliment, and digestion appeared to be accomplished in the same time. None of the functions, indeed, presented any modification, nor did dissection reveal any change in the abdominal circulation.

The spleen would not seem to be very liable to idiopathic affections; but it frequently participates in other diseases, and especially in those of a malarious character, as intermittent fever, as well as in typhoid fever and typhus.

In 1839, according to the Report of the Registrar-General, the

number of deaths from diseases of the spleen, in England and Wales, was 29. In this country, the proportion is doubtless greater.

### 1. INFLAMMATION OF THE SPLEEN.

SYNON. Splenitis, Inflammatio Splenis, Inflammatio Lienis, Empresma Splenitis; *Fr.* Splénite, Inflammation de la Rate; *Ger.* Milzentzündung, Entzündung der Milz.

Acute inflammation of the spleen is uncommon, and the same may, perhaps, be said of the chronic form, unless we regard—with some—hypertrophy of the organ to be the sequel of such a pathological condition, which, as will be seen afterwards, we are not justified in doing.

**Diagnosis.**—The symptoms, that would appear to indicate splenitis, are;—pain in the left hypochondriac region, augmented on pressure, and sometimes extending over the whole of the abdomen, so as to give rise to a belief in the existence of some inflammatory condition of the peritoneum or intestines. As in hepatitis, the pain in the side is augmented by coughing, or by drawing a full breath. Along with these symptoms, and dependent somewhat upon the degree to which the inflammation is present, there are the customary phenomena of inflammatory action in the general system, and the stomach usually sympathizes greatly. Such are the chief ordinary signs of splenitis: but it must be admitted, that they are often insufficient to establish the diagnosis. Cases frequently occur, in which the practitioner has great difficulty in deciding as to the precise organ implicated, when the functional phenomena, above mentioned, are present. Taken together, however, they afford a strong presumption, that the inflammation is seated in the spleen.

The serum of the blood, according to Hasse, has been observed by Cullen, Testa, and Heusinger to be turbid in splenitis.

Not unfrequently the spleen has been found diseased on dissection, when no symptoms during life have indicated disease of that organ, rather than of any other in the abdomen.

Chronic splenitis may be the result of the acute form, or it may supervene in the course of some other disease. It is indicated by the same general symptoms, and may end by inducing dropsy or marasmus.

**Causes.**—The causes of acute splenitis are generally of a mechanical nature, as blows or falls on the left side, or wounds implicating its tissue. It has been affirmed by M. Andral, that acute primary splenitis is almost, if not wholly, unknown: but it is easy to comprehend, that idiopathic inflammation may arise in the spleen in the same manner as in the liver.

**Pathological Characters.**—The inflammation may be found to have been seated in the substance of the spleen itself, or in its envelope, and it may present various appearances. It may have ended in softening or in induration of the organ; but these conditions, when observed on dissection, are not perhaps sufficient evidence of the previous existence of inflammation. They may be dependent upon a vice of nutrition, like similar conditions of other organs. The affection may also end in suppuration, and the pus may either be col-

lected in one cavity or in several, and it may be discharged into the cavity of the peritoneum; or, by the formation of adhesions between the parietes of the abscess and the neighbouring parts, it may pass into the stomach, intestines, left side of the chest, &c. An interesting case of probable suppuration of the spleen has been recorded by Professor Gross, of Louisville. The pain, which was of a sharp, lancinating character, similar to that which accompanies acute pleuritis, continued almost uninterruptedly for nearly two weeks. The spleen gradually augmented in volume, and at the expiration of this time, it projected over towards the umbilicus, forming a large rounded tumour between the linea alba and the margin of the ribs. In a short time, fluctuation was perceived, and, on introducing a trocar, about three pints of fetid, dark-coloured matter, issued from the incision. The wound was kept open for several days, by means of a tent; but in a short period it closed, and the patient's health began gradually to improve. This case supervened on repeated attacks of intermittent fever, and was characterized by excessive irritability of the stomach, great pain and tenderness, and an impending sense of suffocation,—caused, no doubt, as Dr. Gross suggests, by the pressure of the enlarged organ upon the diaphragm. The disease was probably suppuration of the spleen; yet doubt must exist, as no opportunity occurred for establishing the point by dissection. It may have been connected with, but not originating in, the spleen.

Gangrene of the spleen is a very unusual occurrence.

**Treatment.**—Acute splenitis requires the same management as the like pathological condition of other internal organs;—general and local bloodletting, followed by revellents, the warm bath, cathartics, rest and regulated diet. The chronic form must be treated by local bleeding and revellents, and by the other agents that are advised under Hypertrophy of the organ.

## II. HYPERTROPHY OF THE SPLEEN.

SYNON. Hypertrophia seu Supernutritio splenis seu lienis, Intumescencia seu Infarctus seu Physconia lienis, Splenalgia subinflammatoria chronica, Splenoncus, Splenemphraxis; *Fr.* Hypertrophie de la rate, Hypersplénopathie (*Piorry*); *Ger.* Milzgeschwulst, Milztumor, Hypertrophie oder Vergrößerung der Milz.

Hypertrophy of the spleen must be distinguished from vascular hyperæmia or engorgement—the latter disappearing gradually with the cause that induced it; whilst the former is an addition to the substance of the viscus, which may remain for life, or disappear under agencies to be mentioned hereafter. Vascular engorgement of the organ,—*splénohémie* of M. Piorry,—is present in many diseases, and strikingly so in typhoid and intermittent fevers. It is rare in the former disease not to meet with the spleen tumid and more distinctly prominent; and there is probably no severe case of intermittent fever, which does not exhibit more or less splenic engorgement. The fact is one of the strongest evidences in support of the function that has been ascribed to the spleen, of serving as a diverticulum to the blood when thrown into irregular distribution from any great disturbing agency. Such we may consider the paroxysm of an intermittent to be. During the cold stage, the blood leaves the surface of the body, and circulates

more largely in the internal organs; hence, the spleen becomes engorged; and under the repeated recurrence of the paroxysms, it may be understood, that the organ itself may become more permanently engorged, and to such an extent as to require time before it can regain its wonted size; or its nutrition may become modified so as to constitute hypertrophy.

In highly malarious districts, splenic disease, of the nature under consideration, is attended with a series of symptoms which have been termed, in the aggregate, *splenic cachexia*; and although this *vice* of the whole system of nutrition is more frequently seen in torrid climes, we not uncommonly meet with it here. The patient is sallow, almost anæmic; liable to dropsical effusions, and to hemorrhages, which are checked with difficulty, owing to the irregularity in the circulation, which is partly owing to the modified transmission of blood through the spleen. A writer on tropical diseases, Mr. Twining, has described the character of this cachexia accompanying splenic engorgement and hypertrophy in a manner that would apply to a similar condition, in a less degree, which we yearly witness in our highly malarious districts. "During the continuance of vascular engorgement of the spleen," he observes, "patients are very prone to foul sloughing ulcers from slight wounds or bruises. When local inflammations or ulcers exist in patients who are suffering from the severer degrees of spleen disease, those peculiar characters of active inflammation, and that healthy constitutional energy on which the deposition of coagulable lymph depends, and by which we find injuries repaired, and the extension of ulceration, as well as the progress of sloughing arrested on ordinary occasions, seem to be in a great measure, if not entirely, subverted. Blood drawn from veins of patients suffering from splenic cachexia varies much in appearance: sometimes it coagulates imperfectly, and no serum is separated; in other cases, the cruor is black and soft, and after being exposed to the air, its surface does not generally assume that more florid colour which we observe on the top of a coagulum of blood drawn from the vein of a healthy person; and it seldom exhibits a buffy coat, except when ardent pyrexia is present, or where the disease is attended with acute pain in the side. The serum, when heated, coagulates as firmly as that of a healthy person, but the coagulum is more friable and less tough, and it frequently has a slight yellowish appearance: sometimes it has a greenish colour. During the vascular engorgement of the spleen, several of the characteristics of scorbutus are present: there is a tendency to hemorrhage from slight causes or injuries; leech-bites, blisters, and issues occasionally ulcerate during the rainy season, and, at times, the slightest ulcerations are apt to slough. Foul gangrenous ulcers of the lips and gums are liable to form, in consequence of slight local irritation, (and often without any obvious cause,) whereby the jaw-bones become carious and exfoliate, and the teeth fall out. Hæmoptysis, as well as hæmatemesis, occasionally occurs when the spleen is very large; and probably the blood, which is vomited, sometimes flows into the stomach from vessels communicating directly with the splenic vein, as the intumescence of the spleen has been observed in some cases to be

immediately reduced by these evacuations of blood. Profuse hemorrhages from the lungs or stomach sometimes suddenly destroy life; but we see other cases in which the functions of the system not having been much disordered previously, the patients recover quickly after these profuse losses of blood; the enlargement of the spleen for the time subsides, and the disease is thus entirely cured. The results of these spontaneous hemorrhages should not be forgotten in deciding on our plans of treatment in ordinary cases of spleen disease."

**Diagnosis.**—Hypertrophy of the spleen may be detected by careful observation. The increase of size may be partial or total; and the degree to which it exists may be somewhat determined by the dulness of sound on the percussion of parts which ordinarily yield a clear sound. If the enlargement be upwards towards the diaphragm, it may not be detected by pressure; and, on the other hand, it must be borne in mind, that the fact of the viscus being felt distinctly beneath the ribs may not be a positive evidence of enlargement, but may be owing to some effusion into the left side of the thorax pressing upon the diaphragm and slightly dislocating the spleen. Pressure and percussion will generally, however, indicate the existence of hypertrophy.

**Causes.**—It has been already remarked, that not only vascular engorgement but hypertrophy of the spleen may be owing to malarious influence, or to the diseases induced by it. Induration with enlargement of the viscus is indeed so common a sequence of intermittent fever, that it has received the names, *Ague-cake*, *Placenta febrilis*, &c. In the course of the intermittent and remittent fevers of Bengal, and of almost all the low and marshy districts in India, enlargement of the spleen is said often to take place so suddenly, that in a few days it can be seen, as well as felt, extending far below the cartilages of the false ribs. The degree of enlargement is variable: it is very common, we are informed, to see the spleen extending downwards on a level with the umbilicus, and laterally from its usual situation as far as half-way between the cartilages of the ribs and the umbilicus. In extreme cases, the diseased spleen fills more than half the abdomen, extending to the right of the navel, whilst its lower extremity reaches the left iliac region. Several cases of this enormous tumefaction, according to Mr. Twining, are to be seen yearly in Calcutta; and some of them recover.

**Pathological Characters.**—Hypertrophy of the spleen may be induced by nutritive irritation of the organ, in which case it appears to be entirely healthy, and merely enlarged. This has been denied; and Professor Gross, of Louisville, remarks:—"Some writers, and amongst others, Dr. Abercrombie, speak of what they call simple enlargement of the spleen, unaccompanied with derangement of structure; if such a state exists, I have never met with it, and am much disposed to doubt the possibility of its occurrence." "This remark," he adds, "applies, of course, exclusively to cases of permanent hypertrophy, and has nothing to do with that tumid and erected condition of the spleen which results from the temporary congestion that occurs during the cold stage of intermittent fever, or from violent emotions of the mind." The author has met with several cases of hypertrophied spleen, in which the most careful examination did not indicate any change from the

characters presented by the organ when in health; and he can as readily comprehend the occurrence of hypertrophy of the spleen without inflammation, as he can that of tumours, or of any form of polysarcia. If the vessels of the system of nutrition, whose office it is to take up, do not execute their functions in an equal ratio with those whose office it is to put down, hypertrophy must necessarily ensue. There may be, in such case, nutritive irritation, but without there being any reason to suppose the presence of an inflammatory process. In many cases, however,—probably in most,—along with hypertrophy, the nutrition of the organ is morbidly changed; and it is found to be softer or harder than natural. At times, indeed, it is so soft, that it resembles a clot of blood enveloped in a thin membrane, which, in the advanced stages of softening, readily gives way. The enlargement, in such cases, is more or less globular. In other cases, it is of the oblong kind; the organ is more firm than natural, and the edge thin and notched; and lastly, a uniform opaque-white, or milky colour of the peritoneal coat is observed,—the membrane being unusually tough, like a thin bladder that had been dried and afterwards wetted in hot water,—and the substance of the spleen itself is, at the same time, soft and flexible. This is said to have been observed on the necroscopy of persons who had been long subject to ague.

**Treatment.**—This must be regulated greatly by the accompanying symptoms. If the enlargement of the spleen be observed in the course of febrile affections, it will remain as long as these affections continue; after which it gradually subsides. In the cases of hypertrophy that follows long-protracted intermittents, the same plan of management, which is demanded for the cure of the intermittent, is appropriate. The sulphate of quinia, in ordinary doses, has been found highly efficacious; as well as the subcarbonate of iron, in full doses, (gr. xv.—xxx. ter die.) Of late, strong testimony has been adduced in favour of very large doses of the sulphate of quinia (gr. xij.—lxxx. and more, in the 24 hours); the most obstinate cases having yielded to a continuance, for a few days, of this treatment. The sulphate of quinia has also been used both externally and internally, but this course appears to have had more effect upon the fever than upon the splenic enlargement.

R.—Quiniæ sulph. gr. xl.—l.

Adipis ʒij.—M.

Some of this ointment to be rubbed on the groins and armpits three times a day.

In most cases, the action of the sulphate of quinia is aided by the previous abstraction of blood, by cupping or leeches, from the left hypochondrium. Occasionally, the application of a mercurial plaster, with which six or eight scruples of the sulphate of quinia have been incorporated, has removed the enlargement effectually. The plaster must be renewed, when the substances of which it is composed are exhausted, which requires from 40 to 50 days. This method, however, must be slow in its action. In some cases, where the enlargement is very great, the viscus weighing eight or ten pounds, the treatment has, of course, to be protracted. No better preparations exist than the combinations of iodine or bromine with iron, (*Ferri. iodid. vel*



*bromid.* gr. ij. ter die,) gradually increasing the dose. The iodide of iron is preferable to the other preparations of iodine, in the generality of cases, owing to the concomitant cachexia, which is rarely absent. Should such not be the case, however, the ordinary preparations of iodine, (*Tinct. iodin.* gr. x. ter die; vel *Potassii iodidi* gr. ij. ter die,) in gradually increased doses, may be prescribed.

The preparations of mercury have been frequently prescribed in these cases; but care must be taken not to push them to ptyalism, for fear of inducing an augmentation of the cachectic condition. A combination of mercury and iodine may be given with much advantage, where it is considered proper to prescribe the former.

R.—Hydrarg. iodid. rubr. in syrup. benè distributi, gr. v.

Micæ panis

Sacchari albi pulv. āā q. s.—ut fiant pilulæ lx.

Dose, two, morning and evening—to be gradually increased.

Along with the internal use of the preparations of iodine, iodine alone, in the form of ointment,<sup>a</sup> may be rubbed on the region of the spleen night and morning; or the ointment may be composed of iodine and iodide of potassium;<sup>b</sup> or of iodine and mercury.<sup>c</sup>

<sup>a</sup> R.—Iodin. gr. iij.  
Adipis, ℥ij.—M.

<sup>b</sup> R.—Iodin. ℥ss.  
Potass. iodid. ℥j.  
Adipis ℥ij.—M.

<sup>c</sup> R.—Hydrargyri iodid. vel  
Hydrarg. iodid. rubr. ℥j.  
Adipis ℥viiij.—M.

Where the hypertrophy has been of long duration, it too often happens, that none of the agents recommended are productive of any advantage. The evil, under such circumstances, has to be endured; and where the hypertrophy is very great, advantage may be derived from methodical compression by means of an appropriate bandage.

The diet should be regulated according to the attendant phenomena. If symptoms of febrile or inflammatory action exist, it should be restricted. On the other hand, when the splenic cachexia is established, it may consist of animal food easy of digestion; and wine, or porter, or both may be permitted to an extent warranted by the special case. Flannel may be worn next the skin; and, where circumstances admit of it, change of air may prove advantageous.

### III. ATROPHY OF THE SPLEEN.

SYNON. Atrophia splenis seu lienis; *Fr.* Atrophie de la Rate.

This is not a very common disease, yet many cases are on record. The viscus has been seen not larger than a walnut. A case has been described, by Professor Gross of Louisville, in which it was scarcely as big as a billiard ball. In this case, it was of a grayish colour, rounded in figure, indurated, almost bloodless, and weighed only one ounce. Both coats were thickened, and the innermost was partially converted into cartilage. The patient—a man, 72 years of age—had died of tubercular phthisis. It is said to have been observed chiefly in connexion with chronic affections of the alimentary tube, liver and kidneys; with ascites, and with profuse discharges of blood from different parts of the body. An interesting case of this kind fell under

the care of the author, and was exhibited by him to the clinical class of the Philadelphia Hospital in the winter of 1842-3. The spleen was not larger than an almond: the patient died of dropsy, without any indication of splenic disease.

#### IV. TUBERCLES, CANCER, CALCAREOUS DEPOSITS, SEROUS CYSTS, AND HYDATIDS, ETC., IN THE SPLEEN.

Some of these affections are by no means unfrequent. Tubercles are often met with in children, and they are generally coexistent with similar morbid productions in the lungs. True calcareous productions—scirrhus or encephaloid—rarely occur in the spleen. Calcareous depositions are not common, and the same may be said of serous cysts and hydatids. These and other morbid productions give rise to no symptoms that are pathognomonic; and, accordingly, they are less interesting to the therapist than to the pathologist.

#### V. DISLOCATION OF THE SPLEEN.

SYNON. *Dislocatio splenis seu lienis, Splenectopia.*

The spleen may be dislocated or removed from its place, but this must of course be an uncommon occurrence; and, when it does take place, must give rise to phenomena, that are often by no means easy of comprehension. Few such cases are on record. One of a deeply interesting character fell under the author's notice, and has been described by him elsewhere. (*General Therapeutics*, p. 305, note, Philadelphia, 1836.) It happened in the person of an estimable lady, the wife of a physician, who had resided for some time in a malarious region of Virginia; and, whilst there, had suffered from the endemic fever of the country, which had left behind it manifest enlargement of the spleen. During her visit to her family in Baltimore, she was attacked with symptoms of severe thoracic and abdominal mischief, somewhat paroxysmal in their character, which yielded so much to appropriate management that the author, who had been requested by a professional friend,—Professor Hall, of Baltimore,—to see her, considered it unnecessary for him to continue his attendance. She was, at this time, about six months advanced in pregnancy. From this period, the author heard nothing more of her until about a week prior to her dissolution, when he was again requested to visit her two days after her delivery, which had been somewhat premature. She was then labouring under great pulmonary and cardiac distress,—the heart being evidently hypertrophied. She was so much enfeebled, however, that auscultation was postponed, and could not subsequently be practised, as she died in a short time afterwards. On examining the right side of the abdomen,—in which pain had been experienced, especially on change of posture, a large tumour was found extending from the hypochondriac region as far as the pelvis. The umbilical margin of this tumour could be felt distinctly lobated, as if it were shaped like the cactus. The tumour was perceptible in some positions of the patient more than in others, evidently changing its seat in the abdomen. On examining the urine, she was found to be labouring, at the same time, under albuminuria. Taking these circumstances into consideration,

with the fact, that in a fall from a horse, some years previously, she had injured the right lumbar region, and that although she had not experienced any prominent or protracted signs of renal or vesical irritation, she had occasionally suffered from severe pain in the loins, and from some uneasiness in passing the urine, there could be little hesitation in referring the tumour to the right kidney; and, under the whole aspect of the case, in regarding it almost hopeless, and demanding palliative management only. From the time of her delivery, she gradually sank until the period of her dissolution.

On opening the abdomen, the tumour of the right side was found to be an enlarged spleen, which had broken away from its attachments, and was resting, with its convex surface on the brim of the pelvis; the lower extremity of the organ being turned up so as to reach the right lumbar region. It was suspended by its peritoneal and vascular attachments, and could be moved freely in any direction. The left kidney was greatly hypertrophied, nearly four times the natural size, mottled on its surface, the cortical substance granular, and the tubular discoloured in parts, and evidently diseased; the pelvis of the organ was enlarged, and the parietes of the ureter were hypertrophied. The left kidney was healthy. In the thorax, the heart was found in a state of hypertrophy, and the right lung completely atrophied, its place being occupied by a purulent or sero-purulent secretion, which completely filled the cavity of the pleura.

**Treatment.**—It is scarcely necessary to say, that if the dislocation of the spleen be detected during life, no skill on the part of the practitioner can restore it permanently to its former situation. That position must of course be selected for the patient, which gives occasion to the least inconvenience; this will probably be on the left side; but it can rarely happen, that the dislocated organ does not speedily give rise to fatal inflammation of the peritoneum.

## CHAPTER III.

### DISEASES OF THE THYROID GLAND.

THE situation of the thyroid gland is at the anterior part of the neck, beneath the skin and some subcutaneous muscles. It rests upon the anterior and inferior part of the larynx, and the first ring of the trachea; and passes outwards, so as to overlap, on each side, the great vessels and nerves of the neck. It is formed of lobes and lobules; has a red and sometimes a yellow colour; and presents, internally, cells or vesicles, filled with a viscid, colourless, or yellowish fluid, which appears like a weak gum. It is larger in the fœtus than in the adult; and, therefore, has been supposed to be inservient, in some manner, to fetal existence. It continues, however, through life, receives large arteries, as well as a number of nerves and lymphatics; and, consequently, the inference would seem to be, that it ought to fill some important office throughout the whole existence. It has been supposed, that the absorbent vessels of the thyroid convey its peculiar secretion to the great veins of the body. The idea, indeed, prevails—as previously remarked—that all the glandiform bodies are concerned in the function of absorption; but if we admit this, it is impossible, in the present state of knowledge, to decide in what manner they act.

The average weight of the thyroid is about an ounce.

It may suffer from acute inflammation and its results; but this happens spontaneously very rarely, and only—it has been affirmed by Dr. Copland—in scrophulous persons. The physician is, indeed, but seldom consulted, except for one of its diseased conditions—*hypertrophy*.

#### I. HYPERTROPHY OF THE THYROID GLAND.

SYNON. Bronchocele, Deironcus, Struma, Panus thyroideus, Tumidum Guttur, Hernia Gutturis, H. bronchialis, Thyreocele, Thyreonus, Thyreophyma, Thyremphraxis, Thyreophraxia, Derbyshire Neck, Swelled Neck; *Fr.* Goître, Hypertrophie du corps thyroïde, Grosse gorge, Gros cou; *Ger.* Kropf, Anschwellung der Schilddrüse.

Hypertrophy of the thyroid gland, to a slight extent, often exists without exciting any notice; but it is, occasionally, to such a degree as to induce an unsightly deformity.

**Diagnosis.**—In this, there is usually no difficulty. The patient's attention, or that of the friends, is directed to a swelling in the situation of the thyroid, sometimes commencing in both lobes; but, at others, in the isthmus between them. This swelling may proceed to a certain extent and no farther, and it may be so small as not to induce the patient to seek for medical advice; at times, however, the hypertrophy goes on increasing, until ultimately it invades the whole of the anterior part of the neck from the chin to the sternum. It is rarely equable, but admits of the distinction being made between the lobes and the isthmus; and it is commonly more developed on one side than on the other.

In the early periods of the disease, and often for years, the tumour is soft and elastic, but in the progress of time, it becomes harder, and, in some cases, ultimately acquires the consistence and feel of fibro-cartilage.

**Causes.**—Of the causes of goître, nothing altogether satisfactory has been offered. It was at one time universally supposed to be owing to the drinking of snow-water, descending from the summits of lofty mountains, by the inhabitants of the valleys beneath;—but the fact that the disease exists in countries in which snow is never witnessed—as in Sumatra—was sufficient to dispel this idea: moreover, it is not known in Greenland, where the only drink of the inhabitants is snow-water. In Captain Franklin's expedition to the polar sea, goître was found to be very prevalent at Edmonton, where the soil is calcareous. It was discovered, according to Dr. Richardson, that the disease attacked those only who drank of the water of a certain river—the Saskatchewan—and that the natives, who confined themselves to *snow-water* in the winter, and drank of the small rivulets which flow through the plains in the summer, were exempt from it. These facts naturally drew attention to the water as a cause of the disease: indeed, in many places, it has been usual so to ascribe it. At Nottingham, in England, where it prevails, the common people refer it to the hardness of the water,—that is, to its impregnation with calcareous salts; and a writer on bronchocele, Dr. Inglis, affirms that the presence of magnesian limestone always implies the co-existence of the disease. If to this testimony we add that of Mr. M'Clelland, a writer in India,—who states, that in the course of his professional inquiries, which extended over 1000 square miles, and were prosecuted without any regard to theory, no instance occurred, in which goître prevailed to any extent, where the villages were not situate on or close to limestone rocks,—the evidence is strong indeed, that goître may be owing to the drinking of water containing calcareous salts. Still, it is proper to observe, that there are many places, as the Valois, in which there are no limestone formations; and in other cases where goître prevails, the water contains no calcareous salts. Although it is probable, therefore, that water, containing calcareous salts, may afford a predisposition, something, at present inscrutable, in the locality is necessary for the development of the disease; and, perhaps, after all, we know no more in reality, of the immediate cause of this endemic, than we do of that of endemic diseases in general. These views are confirmed by recent inquiries by Dr. C. P. Falck, of Marburg, who concludes, after extensive experience in Nassau and Hesse, where bronchocele is endemic; *first*, that although different authors have found the disease to be accurately confined, in certain districts, to particular strata of rocks,—as in Kumaon, according to Mr. M'Clelland, to transition limestone; in Wurtemberg, according to Riedle, to shell limestone; in England and Siberia, to magnesian limestone; in Hesse, to shell and magnesian limestone; in Switzerland to transition limestone and *Nagelfluh*,—*Breccia Helvetica*; yet, that in several districts, situate on similar formations, as in Wolfhagen and Hofgeismar, bronchocele rarely occurs; and *Secondly*, that the assertion of Mr. M'Clelland, that the disease is unfrequent in districts where the primitive strata prevail,

is disproved by Falck's observations in Hesse; who was farther informed, that bronchocele is frequent in the districts of Schierke, Lehrbach, and Neuwerk, in the Hercynian forest, which are situated on primitive and transition rocks; and similar observations appear to have been recorded by Humboldt, De Vest, and Iphofen.

The disease is known to prevail, especially at the base of lofty mountains, in many parts of the globe. It is endemic at the foot of the Alps—where it is frequently associated with cretinism—and of the Apennines; in Derbyshire, where it is called the *Derbyshire neck*; at the base of the South American Andes, where it is called *papas*; and in the valleys of the mountain chains in most parts of this country. The author has seen many cases of it in the vicinity of the Blue Ridge, in Virginia; and it is present in the mountainous regions of Pennsylvania, New York, New Hampshire, Vermont, &c. But although most frequently seen in deep valleys of mountainous regions, it is sometimes endemic in lofty situations:—for example, at Bogotá, 6000 feet above the level of the sea.

Goître is much more common in females than in males. Of 49 cases, according to Mr. A. Crawford, admitted into the Hampshire County Hospital, England, in ten years, 48 were women. Of 70 patients, treated in the Chichester Infirmary, in nine years, two only, according to Dr. Forbes, were males, and they were boys of a very feeble and feminine habit, and backward for their years. Of 25 or 30 cases, treated by the author, all were females. It would appear, however, that in Switzerland, and in some parts of India, where the disease prevails extensively, the proportion of males is greater. The disease is rarely seen before the age of puberty; but cases have been met with in the new-born.

**Pathological Characters.**—It has been remarked, that the characters of the tumour are different at different stages of its existence. At first it is soft; but the texture gradually becomes of greater consistence, until, ultimately, it may acquire a cartilaginous hardness. It may be naturally inferred, that the internal character of the tumour will correspond with these external indications. In the soft condition, when cut into, it generally gives issue, on pressure, to a ropy gelatinous fluid. In the more chronic cases, the consistence is greater; and, owing to the enlargement of the cells which enter into its composition in the healthy state, it appears to be interspersed with numerous cysts of about the size of a pea, which contain a fluid varying in character, but generally glairy. In very old cases, osseous depositions exist, and these are frequently accompanied by cartilaginous formations. The latter may also exist alone. Occasionally, the whole organ is transformed into an osseous capsule, filled with various kinds of matter, especially the jelly-like, the suety, and the melicerous. Dr. Gross states, that he has a specimen of the kind in his cabinet; one of the lobes has almost disappeared; the other is converted into a firm solid capsule, as hard as bone, though scarcely a line in thickness. On sawing through this osseous tumour, which does not exceed the volume of a hen's egg, he found it filled with a white, curdy, friable substance, not unlike semi-concrete cheese.

Hypertrophy of the thyroid gland—like other hypertrophies—has been presumed, by many pathologists, to be the result of chronic inflammation; but the remarks on hypertrophy of the spleen are equally applicable here. Any loss of balance between the vessels of nutrition that deposit, and those that take up, which induces a preponderance of the deposition by the former, may give rise to it. That this, however, is often combined with chronic inflammation is shown by the concomitant alterations of structure; but these are probably concomitants only, and the inflammation, which gave rise to them, may have had nothing to do with the production of the hypertrophy itself.

**Treatment.**—The discoveries of modern chemistry have rendered the management of this disease much more simple than it was formerly. It had long been known, that under the administration of burnt sponge, the nutrition of the hypertrophied thyroid was frequently so modified, that the enlargement gradually disappeared; but as it was a matter of difficulty to discover any agent in it, to which the remedial efficacy could be referred, many therapeutists were not disposed to place much reliance upon it, and frequently subjected it to very imperfect trials. The discovery of iodine in it led to the employment of that agent, and soon the published cases of its wonderful effects were numerous. Nor, as in the case of many other therapeutical agents, brought forward with equally lofty pretensions, has it declined in the estimation of practitioners. The author has succeeded in wholly removing nearly twenty cases of soft goitre by it; and multitudes have been equally successful. It has been recommended, by some, that its exhibition should be preceded by bloodletting; and, as the abstraction of blood facilitates absorption, this may be advisable,—especially where little, if any, effect seems to be induced by it, after it has been administered for some time. By many persons, the internal administration of iodine has been trusted to alone, either in the form of the tincture (gtt. x. ter die in aq. sacchar.), of the solution of the iodide of potassium, (same dose as the tincture,) or of Lugol's solution—which is a solution of the ioduretted iodide of potassium.

R.—Iodin. ℥j  
Potass. iodid. ℥ij.  
Aquæ fʒvij.—M.

Dose, ten drops, three times a day.

Whatever be the preparation of iodine employed, it must be persevered in for a length of time, and the dose be gradually increased. The author has never witnessed any marked benefit from it until it had been continued for at least a month. Others prefer its external administration, in the form of the *unguentum iodini*,<sup>a</sup> the *unguentum potassii iodidi*,<sup>b</sup> the *unguentum iodinii compositum* of the London Pharmacopœia,<sup>c</sup> the *unguentum hydrargyri iodidi*, or the *unguentum hydrargyri biniodii* of the same Pharmacopœia,<sup>d</sup> &c. &c.

<sup>a</sup> R.—Iodin. gr. iij.  
Adipis ʒij.—M.  
A drachm to be rubbed on the tumour  
twice a day.

<sup>b</sup> R.—Potass. iodid. ʒss.  
Adipis ʒiss.—M.

<sup>c</sup> R.—Iodin. ʒss.  
Potass. iodid. ʒj.  
Alcohol. fʒj.  
Adipis ʒij.—M.

<sup>d</sup> R.—Hydrarg. iodid. vel biniodid. ʒj.  
Ceræ albæ ʒij.  
Adipis ʒvj.—M.

The various other preparations of iodine may likewise be prescribed. (See the author's *New Remedies*, 5th edit., Philadelphia, 1846). Some have advised, that the external use of the remedy should be prescribed first; and that, at a later period, it should be directed internally also.

The preparations of bromine, as well as bromine itself, appear to be equally efficacious in the treatment of goître, but they are not as much employed.

It is not improbable but that the animal charcoal in the burnt sponge may be possessed of some efficacy in modifying the nutritive actions in the hypertrophied thyroid; for it is asserted by M. Weise, that goître, even when scirrhus, has been made to disappear under the use of animal charcoal, especially when associated with burnt sponge.

R.—Carbon. animal. gr. vj.

Spong. ust. gr. xij.

Glycyrrh. pulv. ℥ss.—M. et divide in partes vj. æquales.

Dose.—One, night and morning.

Many other therapeutical agents, that modify the function of nutrition, as the *liquor potassæ*, the carbonate of soda, the chloride of calcium, mercury, &c., have been prescribed, but they are far inferior to those above mentioned.

When the tumour is so large as to threaten suffocation, and does not yield to the remedies recommended, the aid of the surgeon becomes necessary,—either to extirpate the hypertrophied gland, or to interfere with its nutrition by tying the thyroideal arteries, or by passing a seton through it. These, however, must be the last resource, and can very rarely be required.



## CHAPTER IV.

### DISEASES OF THE THYMUS GLAND, AND SUPRARENAL CAPSULES.

THE thymus gland—being an organ of fœtal existence chiefly—is not of much interest in its pathological relation. It is situate in the superior mediastinum. Its appearance is glandular, and its colour various. In the progress of age, it diminishes, so that in the adult it is extremely small, and in old age can scarcely be discovered amongst the cellular tissue. Its absolute increase appears to cease, usually, at about the age of two years. It is surrounded by a thin cellular capsule, which sends prolongations internally, and divides it into lobules of unequal size, in which several vesicles, filled with a milky fluid, are distinguishable. The ordinary weight of the thymus at birth is said to be about half an ounce; but this probably exceeds the average. Its size is very variable.

It is rarely organically diseased; the chief pathological condition of interest being hypertrophy, which is sometimes met with, and has been regarded as a cause of asthma in children. (See THYMIC ASTHMA.) In some cases, the gland has been found to weigh an ounce or two, and to be so voluminous as to compress not only the lungs and the trachea, but the pneumogastric nerves in their passage downwards. The disease appears to consist in simple hypertrophy. Often no change of structure is perceptible.

Various degenerations—*calculus*, *scirrhus*, &c., of the thymus are recorded to have been met with, but they are so rare as not to merit any more than mere mention.

THE SUPRARENAL CAPSULES, situate above the kidney, and which were at one time supposed to be the seat of atrabilis or melancholy, are not possessed of much pathological—still less, of therapeutical—interest.

## BOOK VI.

### DISEASES OF THE NERVOUS SYSTEM.

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IN man and the upper classes of animals, the nervous system is of great pathological as well as physiological interest. It has been esteemed as not only the essential instrument of vital association, but of vital endowment, and, therefore, present in every body possessed of life,—in the vegetable as well as in the animal. By many distinguished anatomists, it has been conceived to be the first formed in the fœtus, and it has been maintained, that the presence or absence of any of its portions regulates the presence or absence of the organ to which they are ordinarily distributed. If, however, we admit that a distinct system of nerves exists in the vegetable, a wide distinction between them and those that are present in the upper classes of animals is at once apparent;—there being, in the former, no great centre to which those impressions can be referred. The pith of the vegetable, with the various knots or ganglia in its course, has, indeed, been regarded as a nervous system resembling the ganglionic or sympathetic system in man, under whose presidency the mass of physiologists consider, that the organic actions of nutrition and secretion are accomplished.

The same views are applicable to the lowest divisions in the animal scale, in which, although we may meet with ganglia and nerves, we have nothing like brain or spinal marrow. It has been conceived, therefore, that up to a certain elevation in the scale of life, all the functions of the body are carried on under the presidency of a ganglionic system. But, although it may be true, that such a system exists in those animals, there is reason for believing, that it is not identical with the ganglionic or sympathetic system which is found in the upper classes. Since the promulgation of the views of a recent observer, Dr. Marshall Hall, on the nervous system, new researches have been undertaken, and it would seem, that the ganglionic system, met with in all animals, is rather concerned with certain functions, which Dr. Hall has ascribed too exclusively to the spinal marrow, inasmuch as they exist in the invertebrata as well as the vertebrata.

In man, all the nerves of the human body, according to the writer just cited, may be divided into three classes: *First*. The cerebral, or the sentient and voluntary. *Secondly*. The true spinal, or excitomotory; and *Thirdly*. The ganglionic, or the nutrient and secretory. If the sentient and voluntary functions be destroyed by stunning an animal by a blow on the head, the sphincter muscles still contract when irritated, because the irritation is conveyed to the spine by an appropriate nerve, and the reflex action takes place to the muscle so

as to throw it into contraction; but if the spinal marrow be now destroyed, the sphincters remain entirely motionless, because the centre of the system is destroyed. Dr. Hall thinks, that a peculiar set of nerves constitute, with the true spinal marrow as their axis, the second subdivision of the nervous system; and he distinguishes them into the *excitor* and *motory*. The *first* or the *excitor* nerves pursue their course principally from external surfaces, characterized by peculiar excitabilities, to the true medulla oblongata and medulla spinalis; the *second* or the *motor* nerves pursue a reflex course from the medulla to the muscles, having peculiar actions concerned principally in ingestion and egestion. Dr. Hall thinks farther, that there is good reason for viewing the fifth encephalic and posterior spinal nerves as constituting an external ganglionic system for the nutrition of the external organs; and he proposes to divide the *ganglionic* subdivision of the nervous system into—*first*, the *internal ganglionic*, which includes that usually denominated the sympathetic, and probably filaments of the pneumogastric; and *secondly*, the *external ganglionic*, embracing the fifth and posterior spinal nerves.

The important views of Dr. Hall met with much opposition, not only on the ground of want of originality, but also of adequate foundation; but they experienced the able support of Messrs. Müller, Grainger and others, and seemed to the author, “calculated to explain many of the anomalous circumstances which we so frequently witness.” (See the author’s *Human Physiology*, 6th edit. i. 78; Philad. 1846.) The inadequacy of the evidence adduced by Dr. Hall was strongly urged, in different able papers in the *British and Foreign Medical Review*, by Dr. W. B. Carpenter, who has since, however, on a full investigation of the matter, in the various classes of animals, arrived at results confirmative of the existence of an excito-motory system, that is largely concerned in the execution of various most important functions.

The result of all inquiries would lead to the belief, that many nervous functions, which must exist in the humblest of organized creations, are carried on under nerves which belong to the reflex class, instead of the sympathetic, to which we have been in the habit of referring them. Experiments exhibit, indeed, that the great sympathetic is a less important part of the organism than is usually supposed, and almost justify the question propounded by M. Magendie in the first edition of his “*Physiology*,” whether it be really a nerve? When Sir A. Cooper tied the great sympathetic on a dog, he found that but little effect was induced; the animal’s heart appeared to beat more quickly and feebly than usual; but of this circumstance he could not be positive on account of the natural quickness of its action. The animal was kept seven days, at which time one nerve was ulcerated through, and the other nearly so, at the situation of the ligatures. Another animal was still living at the time he wrote, on which the sympathetic had been tied nearly a month.

To the views of Dr. Hall it will be frequently necessary to refer in explaining many important diseases of the nervous system. To the cerebral system of nerves, in his division, he assigns all diseases of

sensation, perception, judgment and volition,—therefore all painful, mental and comatose, and some paralytic diseases. To the true *spinal* or *excito-motory* system he refers all spasmodic and certain paralytic diseases, but he properly adds, that these two parts of the nervous system influence each other both in health and disease, as they both influence the ganglionic system.

In investigating the diseases of the nervous system, it is important to bear in mind, that it is inclosed in various membranes or *meninges*, which may be themselves affected with disease singly, or along with the substance of the encephalon and spinal marrow. These membranes are the *dura mater*, the *arachnoid*, and the *pia mater*,—the arachnoid being a serous membrane, which secretes a thin fluid for the purpose of lubricating the encephalon, and enters into all its cavities.

The *medulla spinalis*, according to some anatomists, is composed of three tracts or columns, on each side—an anterior, a middle, and a posterior; and it is the opinion of a distinguished physiologist,—Sir Charles Bell,—that whilst the anterior column gives origin to nerves of motion, and the posterior to nerves of sensation, the middle column gives origin to a third order, having the function of presiding over the respiratory movements, and which are called by Sir Charles Bell, the *respiratory nerves*. This view would lead to the admission of at least three sets of nerves.—one destined for motion, one for sensation, and a third for a special kind of motion—the respiratory; and that every nerve of motion communicates to the muscles, to which it is distributed, the power of aiding, or taking part in, motions of one kind or another;—so that a muscle may be paralysed, as regards certain movements, by the section of a nerve, and yet be capable of others of a different kind, by means of the nerves that are uninjured. This division is not, however, universally received, and even by some, who are of opinion, that the sensitive and motor filaments arise from distinct tracts of the spinal cord, it is denied, that this is the case with those that arise from the upper part of the cord,—there being a blending of the sensitive and motor tracts there, which cannot easily be explained. Pathological cases, too, occasionally occur, which throw great difficulty on this subject. Two have been related by Messrs. Stanley and Budd, in which disease was confined to the posterior column; yet sensation remained unimpaired, whilst the power of motion in the lower extremities was lost. Many physiologists, too, are of opinion, that there is no special column destined for respiration, and that there appears to be nothing so peculiar in the action of the respiratory muscles, that they should require a distinct set of nerves. Much evidently remains to be accomplished, before the precise arrangement of the columns of the spinal cord, and of the relations of the nerves connected with them, can be deemed established. Sir Charles Bell, indeed, renounced his former opinion, that the posterior roots of the spinal nerves proceed from the posterior column, and afterwards described them as arising from the middle column,—affirming, at the same time, that it is not impossible, that the posterior column may be connected with the sensitive roots of the spinal nerves, although he has not hitherto succeeded in tracing it.

The *neurine* or nervous substance, of which the nervous system is composed, is soft and pulpy; but it is proper to bear in mind, that its consistence varies in different portions, and in the whole, at various ages. In the fœtus it is semifluid; in youth, of greater firmness, and of still greater in the adult. The consistence varies, again, according to the period that has elapsed since the death of the individual. It loses its firmness by being kept, and ultimately becomes semifluid. It is likewise—as will be seen—rendered semifluid by disease, constituting softening of the brain, which has of late years been described as a special morbid condition of the viscus. It is composed of two substances, which exhibit a very different appearance on dissection: the one of these is gray and of soft consistence—the *cortical*, *cineritious* or *vesicular* substance: the other is white and more compact—the *white* or *medullary* substance. Although, however, the gray substance is termed *cortical*, it is not always seated at the exterior. In the medulla spinalis, the situation of the two substances is reversed. The general belief amongst physiologists is, that the nervous power originates in the gray matter, and is conveyed along the medullary to all parts that are supplied by nerves. It is believed, moreover, that the mental manifestations are more particularly—if not wholly—elicited by the action of the gray substance at the circumference of the brain; but this is a topic of profound physiological investigation, and by no means settled. It cannot be entered into here.

A few words may be necessary in regard to the *circulation in the encephalon*. The passage of the chief blood-vessels—the carotids and the vertebrales—is extremely tortuous, so that the blood cannot impinge on the brain with any great force, and the vessels become capillary before they enter the organ,—an arrangement, the importance of which is obvious, when it is recollected how large an amount of blood is sent to the encephalon. This amount must, of course, vary according to circumstances. In hypertrophy of the heart, the quantity is, at times, greatly increased, as well as in active hyperæmiæ or determinations of blood—as they are termed—to the encephalon. It is obvious, too, that an equal accumulation may occur, if the return of the blood from the head, by means of the veins, be in any manner impeded, as when we stoop, or compress the veins of the neck by a tight cravat, or by keeping the head turned for any length of time. It has been maintained by many, that the circulation in the brain is such, that the neurine cannot be compressed by any force which can be conveyed to it from the heart through the arteries, whilst the vessels are in a state of integrity; and that, in like manner, the amount of blood cannot be diminished, without something entering to supply the place, which had become vacant; and hence, that the quantity of blood, circulating in the brain, in health, is always identical, and distributed in certain proportions between the arterial and venous vessels. Yet it appears clear, that the quantity distributed to the different vessels must vary according to circumstances, and that this variation must give occasion to different effects on the nervous system; and the truth of this view has been recently established by conclusive experiments on animals by Dr. George Burrows. Dr. J. H. Bennet has gone so far as to

affirm, that "as far as the explanation of morbid phenomena is concerned, the terms 'change of circulation within the cranium,' and 'pressure on the brain,' are synonymous, as the one cannot take place without the other." This view, however, is scarcely tenable, for direct experiment shows, that if the flow of blood to the brain by means of the great vessels be prevented, phenomena are induced, which certainly cannot be referred to accumulation of blood in the encephalon, or to pressure. Of the main arteries that supply the encephalon, it would appear, from the experiments of Sir Astley Cooper, that the vertebral are much more important, as regards the brain and its functions in certain animals—as the rabbit—than the carotid. By tying them, the nervous power was much lessened, and the animal did not, in any case, survive the operation more than a fortnight. In dogs, also, Sir Astley tied the carotids with little effect, but the ligature of the vertebrals had a great influence. The effect of the operation was to render the breathing immediately difficult and laborious, owing, in his opinion, to the supply of blood to the phrenic nerves, and the whole "respiratory tract" being cut off. The animal became dull and indisposed to make use of exertion, or to take food. Compression of the carotids and the vertebrals at the same moment in the rabbit destroyed the nervous functions immediately. This was effected by the application of the thumb to both sides of the neck, the trachea remaining quite free from pressure. Respiration entirely ceased, with the exception of a few convulsive gasps.

Of late years, auscultation has been applied to the diagnosis of encephalic disease. Attention was first directed to it by Dr. J. D. Fisher, of Boston, Massachusetts; and Dr. S. S. Whitney, of Newton, Massachusetts, has published an elaborate paper on the same subject. He noticed certain sounds heard on auscultation, which—he says—cannot be detected in the healthy state of the encephalon. These are first, a *cephalic bellows' sound*, which in a pure or modified state has been noticed as the accompanying phenomenon of cerebral hyperæmia, acute cerebral inflammation, hydrocephalus, compression of the brain, scirrhus induration of the substance of the brain with softening, ossification of the arteries of the brain, and the hydrencephaloid disease. Secondly, *encephalic*, or *cerebral egophony*, noticed only in those cases of cerebral disease that are accompanied by effusion of fluid in and about the substance of the brain. Thirdly, The *frémissement cataire* or "purring thrill" heard in aneurism of the basilar artery; and fourthly, a *cooing* or *musical sound*, which, according to him, is never found accompanying any state of hyperæmia or active inflammation of the brain, "and, therefore, [?] may be considered strictly pathognomonic of a state of *excessive anæmia of that organ!*" The remarks of Drs. Fisher and Whitney merit attention. It is proper, however, to observe, that distinguished auscultators have failed to discover the encephalic bellows' sound pointed out by Dr. Fisher. They have all escaped the author.

It has been already remarked, that the cortical part of the brain has been considered to be concerned in the intellectual and moral manifestations. It is in the encephalon that sensation is experienced

and volition sets out; for although nerves of sensation and of motion may be distributed over every part of the organism, their great centre would appear to be below the level of the centrum ovale of Vieussens, and not lower perhaps than the tubercula quadrigemina. Of the mode in which the fibres of the medulla spinalis proceed upwards, so as to form, by their expansion, the encephalon, opportunity will occur hereafter to speak, as well as to explain certain phenomena, that are connected with the decussation of those fibres in the medulla oblongata; topics which are fully investigated, however, by the author in the work already cited.

According to the Third Report of the Registrar-General of England, (1841) the mortality from diseases of the nervous system was 3·2 in a population of 1000—(500 of each sex); and those diseases were 25 per cent. more fatal to males than to females, the rate of mortality among males being 3·6; amongst females, 2·8 in 1000. On investigating the causes of death in the Philadelphia Hospital, Blockley, Dr. Tabb, of Gloucester County, Virginia, found the ratio to be 1 in 5·5; and the greater liability of the male sex was in the proportion of 1·8 to 1.

## CHAPTER I.

### ORGANIC DISEASES OF THE NERVOUS CENTRES.

#### I. HYPERÆMIA OF THE NERVOUS CENTRES.

SYNON. *Fr.* Hypérémie ou Congestion des Centres Nerveux.

THIS affection consists in an accumulation of blood in the vessels of some portion of the nervous centres; at times, affecting the whole of the cerebrum, cerebellum, or medulla spinalis; at others, affecting only detached portions of those organs, and this depending upon the particular vessels on which the cause of the hyperæmia may exert its action.

It may be convenient to consider separately the phenomena of hyperæmia, according as it affects the three great divisions of the cerebro-spinal axis—the *cerebrum*, *cerebellum*, and *medulla spinalis*.

##### a. *Hyperæmia of the Cerebrum.*

SYNON. *Cephalæmia*, *Hyperæmia cerebri*, *H. capitis*, *Plethora cerebri*; *Fr.* Hypérémie ou Congestion du Cerveau, *H. cérébrale*, *Congestion cérébrale*, *Encéphalohémie (Piorry)*; *Ger.* Gehirncongestion, *Kopfcongestion*.

**Diagnosis.**—The symptoms of cerebral congestion differ according to the degree of the hyperæmia, and to the particular part of the brain where it exists. When slight, it is indicated by cephalalgia, vertigo, confusion and somnolency—the patient at the same time preserving his intellectual faculties, sensibility, and power of motion; at other times, there is a slowness and sluggishness of the movements; and, occasionally, the opposite condition of increased activity and incessant desire to be moving; and formication is sometimes felt in one or both sides of the limbs or face. The pulse is full, tense and vibratory; the temporal and carotid arteries beat with violence, even although the pulsations of the heart may be natural. The face is red; the eyes are injected, and epistaxis may supervene. These symptoms may or may not be attended with fever, and they may continue for a shorter or longer period, recurring, at times, periodically,—every evening for example; or at distant intervals, as at spring and fall. When the hyperæmia is to a greater degree, there is sudden and total loss of consciousness, the patient falling down as if deprived of life: this is one of the forms of *Apoplexy* of most writers, and, by the French, termed *Coup de Sang*. In this condition, he may remain for a longer or shorter period, deprived of all or almost all sensation, volition, and mental and moral manifestation: death may take place in a few minutes, or there may be a rapid or gradual restoration to health, the intellect remaining, for a time perhaps, disordered; the senses impaired, the speech embarrassed, with more or less general or partial debility; but no hemiplegia or other form of enduring paralysis, as is the case when the above symptoms are induced by cerebral hemorrhage. Such, at least, is the general rule; but there are exceptions to it. At



times, hemiplegia or paralysis of one side of the body supervenes on cerebral hyperæmia; but, differently from what occurs in hemiplegia from cerebral hæmorrhage, it may pass off as suddenly as it occurred. Cases, however, are on record, in which there has been persistent paralysis, without any evidences of cerebral hæmorrhage on dissection. This severe form is not uncommonly accompanied with convulsions; at other times, the tongue is suddenly paralysed, but sooner or later recovers. In some cases, apparently produced by hyperæmia of the brain, the functions of sensibility and motility have been mainly affected. The case of a person is related by M. Andral, who, for the space of a month, was attacked several times in the course of the day with general paralysis. His attacks continued for about five or six minutes, and they were ultimately cured by copious bloodletting. Lastly, the principal indication of hyperæmia may be the intellectual disturbance, which may exist alone, or be associated with some slight disorder of sensation or motion. In this case, the delirium is, at times, intense; the patient may exhibit enormous muscular power; and death may follow in consequence of deficient nervous supply to the respiratory apparatus, so that the patient dies as it were asphyxied—the face being florid and swollen, and, at times, livid and black. Why these various symptoms should arise from the same pathological state can only be explained by the presumption, that particular parts of the encephalon have been implicated in one case and not in another; but our knowledge of the precise functions, executed by different portions of the brain, does not enable us to point out those that are especially concerned in any of these cases. Some have supposed, that congestion, confined to the cortical substance of the hemispheres, gives rise only to disorder of the intellect; but others have seen cases in which the function of motility was affected, where the cortical substance was alone implicated; whilst, again, the intellect has been disordered in cases where the cortical substance was found unaffected. We shall only be able to account for the different symptoms induced by hyperæmia of different parts of the brain, when farther and repeated inquiry shall have better instructed us on the physiological functions executed by them.

**Causes.**—The causes of cerebral congestion may be,—a sudden change from a cold or temperate atmosphere to one, the temperature of which is very elevated; or, more frequently perhaps, exposure to a very cold atmosphere, as during the disastrous campaign in Russia in 1812, when many persons perished in this manner. Of 114 cases collected by M. Andral, 50 occurred in the months of December, January and February; 31 in March, April and May; 36 in June, July and August, and 17 in September, October and November.

Anything that gives occasion to repletion, and on the contrary to exhaustion or debility, may occasion irregularity of action in the vessels of the brain, and, indeed, in the whole of the circulatory system, and produce hyperæmia of that viscus. The effect of extreme exhaustion in inducing this state is well seen in the prostration caused by excessive uterine hæmorrhage. The patient may be pulseless, pale, and exanguious, and, in the course of a few hours, labour under the

most manifest symptoms of active cerebral hyperæmia; in which we are compelled to infer irregularity of vascular action, certainly not polyæmia or vascular fulness; and similar remarks apply to the hyperæmia that accompanies the reaction after cholera.

Many substances, taken into the stomach and affecting that organ, and, through it, the brain, may produce this pathological condition. Alcohol, opium, and the various narcotics are well known to have this effect; and cases are on record in which over-distension of the stomach by substances, not possessed themselves of any direct action on the brain or nervous system, have occasioned all the effects induced by narcotic poisons. In these cases, the deleterious influence has probably been exerted primarily on the branches of the pneumogastric nerves, distributed to the lining membrane of the stomach; whence it has extended to the brain, so as to produce full and fatal narcosis. Violent emotions; different chronic affections of the brain; attacks of epilepsy; diseases of the digestive apparatus, hypertrophy, or too great activity of the heart, or still more, any impediment to the return of the blood to that viscus; derangement of the respiratory function; violent muscular efforts,—as straining, vomiting, and sneezing; or simple change of posture, as by turning the head to look backwards; the recumbent posture; the irregularity in the circulatory movements preceding the menstrual period, in the female; excessive venery, or even the simple act of coition—may be regarded as calculated to induce it. It is most common after the age of 35; but it is seen at a much earlier period; and it would seem to occur more frequently in the male than in the female sex.

b. *Hyperæmia of the Cerebellum.*

SYNON. *Fr.* Hyperémie du Cervelet.

Signs of congestion of blood in the vessels of the cerebellum are so constantly met with on dissection, owing to the position of the subject, that it is difficult—often impracticable—to distinguish the normal from the morbid condition. The functions assigned to the cerebellum have been so numerous and diversified, that we are compelled to remain in doubt as to the phenomena over which it presides in health. By some, regarded as the seat of sensibility; by others, as the seat of the forward impulse, and by others, again, as the encephalic organ of generation or amativity, we might expect, that congestion of the vessels of the cerebellum would give rise to aberrations of those functions, which might at once enable us to detect the disease, and, at the same time, to confirm or disprove the views of those physiologists. We are compelled, however, to remain in doubt, and to wait for fresh researches. M. Andral, indeed, thinks that he has observed some facts confirmative of the opinion, which places in the cerebellum the faculty of reacting on the generative organs; whilst M. Magendie refers to pathological cases, in illustration of his view that the forward impulsion is seated in the cerebellum; the backward in the corpora striata. In these cases, the cerebellum being diseased, the balance, he conceives, has been destroyed, and an irresistible tendency to recoil been experienced. All this, however, requires new and repeated investigations.

c. *Hyperæmia of the Spinal Marrow.*

SYNON. *Fr.* Hyperémic de la Moëlle épinière, Congestion sanguine rachidienne, Hypermyelohémic. (*Piorry.*)

This cannot be a common occurrence, nor is it readily diagnosticated. In the present state of science, indeed, there is no group of symptoms, which can be regarded as pathognomonic. Hyperæmia may, of course, be seated in various portions of the spinal marrow, and, according to the precise part affected, the organs to which the nerves proceeding from it are distributed must be implicated; thus, if it exist in the upper portion, the thoracic extremities may be affected; if in the lower, the abdominal, &c.

**Diagnosis.**—The sensibility or motility of different parts of the frame, as of the upper or lower extremities, may be augmented or diminished, whilst the intellectual faculties and the senses are untouched. At times, along with paralysis of the muscles of the extremities, either general or partial convulsions may be present, indicating that the encephalon is at the same time implicated. As the respiratory function and the action of the bladder are influenced by the spinal nerves, they, also, may be modified. The circulation may remain natural, or it may be accelerated or retarded.

As to the terminations of hyperæmia of the spinal marrow,—after a longer or shorter duration, it may end spontaneously, or in hemorrhage, or in effusion of serum, or it may induce death.

**Causes.**—These are obscure. Like hyperæmia of the encephalon, it is common after the age of 35; although examples are occasionally met with at a much earlier period.

**Pathological Characters.**—In the case of the nervous centres, as elsewhere remarked, it is by no means easy to detect with certainty the hyperæmic appearances on examination after death. The point of departure must be an accurate knowledge of the condition of their vessels, when hyperæmia has been unsuspected, and the patient has evidently died of some other affection. Signs of engorgement of vessels frequently present themselves, which are referable to the depending position of the head after death; and this is a cause, why the cerebellum is always found more injected than the cerebrum: much may, likewise, depend upon the amount of impediment to free circulation and respiration, which had existed prior to the patient's dissolution.

A writer of eminence, M. Andral, has pointed out the appearances presented by different parts of the nervous centres in the normal state. The gray substance is found to contain more vessels than the white, and is, consequently, more manifestly injected; and the bases of the anfractuosités are more injected than the summits of the convolutions. The cerebellum, as before remarked, is normally more injected than the cerebrum, and the largest vessels are around the corpus rhomboidale. This grayish portion of the spinal marrow is naturally of a slightly red appearance, and the younger the subject the more it is usually injected.

In hyperæmia of the nervous centres, a red appearance is observable in the congested portions. The redness is dotted, or irregular in the

white substance, and uniform in the gray; and it may vary from a bright colour to a darker; and if the white substance be sliced, small spots of blood form by oozing, which are more or less confluent. The brain, by the French writers, is then said to be *piqueté* ou *sablé*, because the red points resemble greatly grains of red sand strewed over the medullary neurine. If the congestion have occurred for some time, the colour may be yellow or slate,—an appearance, which has been attributed, in the one case, to the diminution of the colouring matter of the blood; in the other, to the deposition of fresh colouring matter. The subarachnoid tissue is commonly somewhat infiltrated,—a natural consequence of the congested condition of vessels,—the watery portions of the blood, as in many other cases of hyperæmia, transuding through the coats of the overloaded vessels; at times, indeed, transudations of blood are found at the surface of the brain.

*Treatment of hyperæmia of the nervous centres.*—All the symptoms, in the generality of cases, appear to indicate the employment of general bloodletting, after which, the headache, vertigo, confusion, and other symptoms of encephalic disorder often cease immediately. Yet discrimination must be employed, as the same train of symptoms may supervene where anæmia and nervous exhaustion are the pathological conditions, and where bloodletting would, of course, be a practice of doubtful propriety. It has been remarked by Dr. Marshall Hall,—of course as a rule liable to exceptions—that a different measure of bloodletting is proper in mere congestion, from that which is advisable in actual rupture; that in the former, there is extreme tolerance of loss of blood, whilst in the latter, the system is greatly, and even dangerously, susceptible of this loss. Where, however, doubts exist as to the propriety of general bloodletting, cupping or the application of leeches may be substituted, which act not only by the quantity of blood they withdraw from the system, but likewise from the revulsion they induce. The French practitioners advise, for this last purpose, that leeches should be applied over the mastoid processes, to the neck, along the vertebral column, or to the anus; but, as a general rule, the nape of the neck is as good a situation as any, and is that which is usually chosen by British and American practitioners. These are extremely valuable agents.

To diminish the flow of blood to the encephalon, M. Négrier has recommended that the upper extremities should be raised in hyperæmia of that viscus. A less vigorous circulation through the carotids, he thinks, results from the increased force required to carry on the circulation through the upper extremities when elevated. (See the article *EPISTAXIS*.)

In addition to the revulsive bleedings above mentioned, brisk cathartics<sup>a</sup> may be exhibited daily or every other day, or stimulating turpentine injections be thrown into the rectum.

<sup>a</sup> R.—Jalap. pulver. gr. xv.  
Hydrarg. chlorid. mit.  
Zingib. pulv. aa gr. v.—M.—or  
R.—Olei tiglii gtt. ij.  
Sapon.  
Acacim aa gr. j.—M. fiant pilulæ ii.  
One or two for a dose.

Sinapisms, or sinapised pediluvia, may also be applied to the feet whilst the head is kept cool, if necessary, by spirituous lotions or by cold water; and if the signs of congestion remain for any length of time, or recur with much frequency, a blister may be applied to the nape of the neck, and an intermittent counterirritation be kept up by applying a fresh one as soon as the former has healed. A seton is sometimes put in the nape of the neck in these cases; but the system speedily becomes habituated to the continuous irritation, and it soon ceases to be as efficacious as the intermittent irritation kept up in the manner described. Revellents—the external especially—are equally indicated in the hyperæmia that is dependent upon anæmia; but care must be taken in the administration of internal excitants, and their effects must be diligently watched.

Where individuals are liable to attacks of hyperæmia of the nervous centres, they should be careful to avoid all excitement, and especially to abstain from alcoholic drinks. Regular exercise should be enjoined; and moderate diet, with not too large a proportion of fluid, to avoid repletion of the vessels. Too long indulgence in the horizontal position, and too much sleep, must be avoided; and, during the attacks of hyperæmia, the patient should be kept with his head elevated, to facilitate the return of blood from the head by the veins, and impede its access by the arteries.

As far as is practicable, extremes of heat and cold should be shunned.

## II. INFLAMMATION OF THE NERVOUS CENTRES.

SYNON. *Fr.* Inflammation ou Phlegmasie des Centres Nerveux.

The researches of physiologists into the functions executed by particular portions of the encephalon not having led to any very clear notions on the subject, it is not probable, that when inflamed, the condition will be indicated by symptoms, which can enable us to detect the particular portion that may be affected. We may without difficulty diagnose the difference between inflammation of the encephalon,—that is of the parts within the cranium, and of the medulla spinalis; but we may have difficulty in pronouncing between cases of inflammation of the cerebrum and of the cerebellum or medulla oblongata; and when we have decided, that the disease is encephalitis, or myelitis, we may still be unable to determine whether it affects exclusively, or simultaneously, the membranes, or the neurine.

### a. *Inflammation of the Cerebrum and Cerebellum.*

SYNON. *Empresma cephalitis, Phrenitis, Cephalitis, Encephalitis, Inflammatio phrenitis. Cauma phrenitis, Inflammatio Cerebri et Cerebelli et Meningium, Sphacelismus cerebri (of the ancients), Phrency, Brain fever; Fr.* Inflammation du Cerveau et du Cervelet, Phrénésie; *Ger.* Entzündung des Gehirns, Hirnentzündung.

Inflammation may attack any of the parts within the cranium. When it affects the cerebrum, it has been called *Cerebritis*, *Fr.* *Cérébrite*;—when the cerebellum, *Cerebellitis*, *Fr.* *Cérébellite*; and when the meninges covering these, *Meningitis*, *Fr.* *Méningite*. Dr. M. Hall, indeed, applies the last term to inflammation of the membranes at the summit

and base, and in the ventricles of the brain; whilst *myelitis* is employed by him to designate inflammation of the substance of the brain and cerebellum. M. Andral employs the term *Encephalitis* to signify inflammation of the neurine of the cerebrum and cerebellum, and in this signification it will be used here. The more recent French writers have endeavoured to diagnosticate between the signs of inflammation affecting particular portions of the brain; but—for the reasons assigned above—their labours have not ended in any very satisfactory results. As the intellectual faculties have been supposed by many to be seated at the periphery of the brain,—when much delirium exists, with the other signs of inflammation to be mentioned presently, the phlegmasia has been presumed to be meningitic, or to implicate only the peripheral portions of the brain: when, on the other hand, somnolency and convulsions, or want of power over the apparatus of voluntary motion, have predominated, the disease has been assigned to the deeper-seated portions of the brain, and especially to the corpora striata, and thalami nervorum opticorum, in the neighbourhood of which are the cerebral seats of sensation and volition. The fact, however, that membranes exist in the ventricles as well as at the base of the brain, would render any attempt at differential diagnosis in those cases necessarily difficult.

For convenience of description, it may be well to separate the consideration of encephalitis or inflammation of the substance of the cerebrum and cerebellum from that of the membranes or meningitis.

#### 1. *Encephalitis*.

SYNON. *Fr.* Encéphalite, Inflammation de l'Encéphale.

Like other inflammations, encephalitis may be acute or chronic.

**Diagnosis.**—1. *Acute form.*—The encephalon being the organ of sensation, volition, and of the mental and moral manifestations, all these must be necessarily modified during an attack of inflammation; but the degree to which they are so is dependent upon the severity, extent, as well as on the character and seat of the inflammation. When encephalitis is evidenced mainly by violent delirium, it constitutes the *phrenitis* of the older writers. At times, this is the only encephalic disorder; but, at others, sensation and motion are both implicated. This is augmented by every impression made on the senses; by the slightest light or noise in the chamber, the admission of which will bring on a paroxysm of delirium. This, at times, continues throughout the whole progress of the disease, but where it is about to terminate fatally, coma frequently takes its place. As a concomitant of the delirium there is usually sleeplessness, or disturbed sleep, with great restlessness. At other times, the patient is morose and unwilling to be disturbed; whilst, at others, again, the intellect may remain unaffected, in which case it is presumed, that the inflammation is deep-seated. The reasons for this inference have been given before. Of the disorders of sensation, violent excruciating headache, increased by light or noise, is the earliest; and, at times, the skin is unusually sensible. Along with these symptoms, the sight and hearing are depraved, and flashes of light, with unusual and singular noises, tinnitus aurium, detonations, &c. are heard: whenever, indeed, these symptoms present

themselves in the course of an acute attack, the advent of encephalitis is to be anticipated, and measures should be taken to prevent it. Although, in the early period of the disease, the functions of the senses are in an excitable and excited state,—the presence of light and noise being painful, and the pupil contracted,—in the latter periods they become obtunded, and are ultimately, when the case is about to terminate unfavourably, lost.

The presence of encephalitis is not unfrequently indicated by great disorder in the motions,—the patient being much agitated, with tremors, subsultus tendinum, convulsions, and paralysis, which are, indeed, regarded as more certain indications of encephalitis than disorders of the intellect. These convulsions may be general or partial, or certain muscles of the body may be rigidly contracted. The nutritive functions are likewise greatly deranged. Vomiting is almost always, if not always, present, and it may mark the onset of the disease. In its progress, the bowels—as in other affections, in which there is concentration of action towards the encephalon,—are constipated. The circulation, as in other inflammatory affections of internal organs, is quickened at the commencement, and the pulse is usually tense; but this is not always the case; and, should the encephalitis terminate by effusion of serous fluid into the ventricles of the brain, it may become unusually slow. The respiration is more or less affected; it is embarrassed and hurried, and may become stertorous when the inflammation is very severe, and resemble the state of the same function in cerebral hemorrhage. The urine appears to be much the same as in meningitis. It deposits, at times, a sediment, and contains a small quantity of albumen. M. Becquerel found the specific gravity to be 1020·2.

The attack of encephalitis does not always occur so markedly as to lead the practitioner to suspect so severe a disease: this is especially the case with children. The child may be dull and restless, with contracted pupil, great sensibility to light and sound, and more or less headache; and these symptoms may not attract much attention, until convulsions, or some of the other signs of encephalitis declare themselves. At other times, signs of inflammatory fever and of cerebral hyperæmia precede those of encephalitis; or violent delirium may be the only indication of its existence. Delirium may, however, exist in conjunction with fever, and yet there may be no encephalitis. In the febrile affections of childhood, which are dependent upon disordered bowels, we frequently observe more or less delirium as ephemeral as the disease of which it forms a part; and in the various forms of delirium that present themselves in protracted febrile and other maladies, we are not justified in regarding the encephalon as in a state of positive inflammation. In some cases the disease commences with convulsions or with rigidity—what the French pathologists term *contractures*—or with paralysis in some of the muscles of voluntary motion, and, as a general rule, in the first stage of the disease, the functions of sensibility are highly exalted; in the second or final stage, the patient sinks into insensibility, coma and paralysis; he is insensible to light

and noise, and the pupils are dilated, and incontractile on the approach of light.

The duration of the disease is various. At times, it destroys in a day; at others, it passes through its stages in a protracted manner, and ends in restoration to health or in death, after the lapse of weeks. Occasionally, when most of the symptoms appear favourable, signs of sinking suddenly supervene, as in inflammatory affections of other important viscera; and hence it is important for us to be guarded in our prognosis, unless all the essential symptoms are yielding, and presaging restoration to health. After it has passed away, certain of the functions of sensibility are apt to remain impaired. In children, strabismus, which may be permanent, is observed, and more or less deafness, and hebetude of the mental faculties are generally noticed.

**Causes.**—These are numerous. External violence frequently occasions it; hence, it is a common consequence of blows or falls on the head, producing concussion of the brain: but it is not necessary that the head should be struck; a fall from a considerable height on the breech or the feet may equally induce it, and it is important to bear in mind, that the inflammation may not immediately follow the attack, but may supervene weeks afterwards. When, therefore, after a severe concussion, vomiting, with signs of stunning or cerebral confusion, results, the practitioner should keep a watchful eye on the patient, to meet encephalitis, should it supervene. Penetrating instruments may likewise cause it, of which the annals of surgery, and especially of military surgery, furnish numerous examples.

A common cause in torrid climes, and one not unfrequent in the temperate regions, is insolation, or exposure to the sun; the patient having perhaps slept in the open air with his head exposed to the rays of that luminary, whence results the *coup-de-soleil* or *sun-stroke* as it termed. The use, too, of ardent spirits, may be a cause; and there are many chronic affections of the brain, which may give rise to inflammation of the parts that surround them:—for example, where a clot has been poured out in the brain; or after a cyst has been secreted around it; or, in tuberculous individuals, after tubercles have formed in some part of the encephalon, the neighbouring parts may be attacked with inflammation, excited probably by their presence. In like manner, the presence of tumours in the brain, or of exostosis of the cranium, may sooner or later occasion it. Not unfrequently, too, it is caused by caries of the bones of the ear extending through the petrous portion of the temporal bone, and inducing disorganizing and fatal encephalitis. At times, too, it supervenes on irritating cutaneous affections of the scalp, as the severer forms of *porrigo favosa*, or on the irritating modes of treatment occasionally practised for their removal, as well as on erysipelas of the face, and on inflammation of the eye, of the nasal fossæ, or frontal sinuses; but these last cases are not common. It has been properly remarked, however, by M. Andral, that in the cases of erysipelas of the face and the hairy scalp, that are accompanied by delirium, there is not always encephalitis: certainly, evidence of this pathological condition has not been presented on dissec-



tion. Encephalitis would appear to have been caused, also, by irritation of a nerve. A case is recorded by M. Lallemand, in which a ligature applied to a part of the right brachial plexus induced inflammation and suppuration of the posterior part of the left hemisphere of the brain, and it has been observed as the result of a ligature, which had forcibly compressed the nerves of the arm. It is likewise connected with diseases of other parts of the system. In the impressive condition of the nervous system in early childhood, it can be understood that dentition may cause it, and that it may be connected with inflammatory states of other parts, and especially of the mucous membrane of the stomach—the centre of sympathies—as it has been termed; hence, in the exanthemata, affecting, as they do, the mucous membranes, and the whole of the dermoid structure, encephalitis may, and does, form a not unusual complication. In fevers, too, supposed by some to be essentially encephalitis, this pathological state occasionally supervenes, but, as has been already remarked, simple delirium may be present without any other evidence of encephalitis. Lastly;—among the causes have been enumerated—excessive study, and any severe mental emotion. These *may* act as such, but long and close observation has not exhibited to the author a single example of encephalitis having been excited by great mental application alone. Where, indeed, cerebral mischief has resulted at all, it has seemed to be rather owing to collateral irregularities, than to the over-exercise of the brain in its normal operations. Over-exertion of the intellect on the part of the parent and offspring has, notwithstanding, been suggested as the cause of a greater number of inflammatory affections of the brain now than formerly.

It would appear from the bills of mortality of New York, that whilst the population of the city has only quadrupled in the last thirty years, the deaths from inflammatory affections of the head, or from “inflammation and dropsy of the brain” alone, have increased more than twelvefold; and a similar increase would seem to have taken place in England and France. Inflammation of the brain may occur at all ages; but, according to the census of Ireland for 1841, the chief mortality occurred from the 5th to the 30th year; and, next to that, from the 30th to the 60th. The proportion of the deaths, according to the sexes, was 100 males to 78·76 females.

**Pathological Characters.**—These are essentially the same, whatever may be the part of the encephalon affected,—injection of vessels. M. Andral thinks it impossible to distinguish the state of inflammation from that of hyperæmia; but, in encephalitis, there are commonly other appearances—the results of inflammation—which enable us to diagnose it. As in other parts of the body, the inflammation is attended by tumefaction, and this accounts for many of the symptoms induced by pressure, which are amongst the phenomena already described as belonging to encephalitis. The convolutions, under such circumstances, are found to be flattened, and when the inflammation has existed for some time, the anfractuosités between the convolutions may be found effaced, so that the brain may exhibit a smooth and equal surface.

One of the results of inflammation of the neurine composing the encephalon is softening—the *ramollissement du cerveau* of the French writers, to be described hereafter; and as this softening is always accompanied by more or less injection of vessels, it presents a red appearance, to which the name *ramollissement rouge* or *red softening* has been given. At times, blood is found to have escaped from the vessels, producing small ecchymoses, or infiltrating the neurine and combining, as it were, with it; or, again, small apoplectic clots may be found disseminated here and there. This last condition M. Cruveilhier has termed *capillary apoplexy*. At other times, ulceration is met with; at others suppuration,—the pus being occasionally infiltrated into the cerebral substance; but at others, again, collected in one or more abscesses. It has been questioned whether the neurine can become gangrenous, although some cases of the kind are on record; the sloughy appearance, however, which it occasionally presents in those who have died of encephalitis, may be regarded as analogous to sphacelus, and to the gangrenous condition of the lungs in pneumonia.

**Treatment.**—As in other cases of severe internal inflammation, blood-letting is the sheet-anchor of the practitioner; and it must be pushed so as to produce a decided effect; the effect, rather than the amount of blood taken, being the guide;—and, in the course of a few hours, should the disease still persist in its violence, and the patient exhibit the necessary toleration, the operation should be repeated, and again and again, should the extent of disorganizing mischief appear to indicate it. When the practitioner is in doubt as to the farther propriety of taking blood from the system, he may find cupping and leeching of essential benefit.

Nauseating doses of antimonials may likewise be administered with advantage, for the purpose of inducing sedation.

R.—Antim. et potass. tartrat. gr. ij.

Aquæ fʒvj.—M.

Dose, a tablespoonful, every two hours.

They may be begun with from the commencement of the attack, and be continued until the phlegmasia is got under. Ice may likewise be permitted,—a small portion at a time being taken into the mouth, and suffered to dissolve there. In this manner, the thirst is allayed, the sedative influence of cold is exerted, and there is no risk of the quantity of fluid circulating in the system being speedily restored, as is the case when cold liquids are freely allowed. Cold may likewise be applied to the head by means of a bladder half filled with pounded ice. This, as well as the cold water pillow, made by putting cold water in a case of elastic-gum cloth is usually highly agreeable to the patient; but, should it be otherwise, no good effect can be expected from it. The affusion of cold water on the head at intervals, in the form of the *douche*, from the spout of a teapot held above and at some distance from it, has also, at times, a soothing agency.

It has been remarked, by M. Andral, that when the phenomena of reaction have been subdued by a greater or less abstraction of blood, the

employment of cold may be had recourse to ; but that this should be adopted with great precaution, on account of two inconveniences. If employed before bloodletting, it occasions so powerful a reaction as to resist, perhaps, every effort to reduce it ; and, if applied too late, the patient may fall into a state of collapse from which nothing may be able to restore him. In the latter case, there can be no doubt, that the use of cold—even if not prejudicial—cannot exert any salutary operation ; but, in the former, the author's experience has not been the same as that of M. Andral. On the contrary, he has found the use of cold internally, as well as applied externally, one of the best sedatives that could be employed, and one admirably well adapted, along with antimonials, to keep down the reaction, that might otherwise have ensued after bleeding ; and, accordingly, he is in the habit of invoking their joint influence.

After the organic actions have been reduced, by the use of the agents above mentioned, various forms of revellents may be prescribed with advantage,—care being taken, that they do not irritate too much, and in this manner react on the encephalon. Purgative medicines would appear to be clearly indicated ; and they are doubtless at times efficacious, by exciting the different tracts of the intestinal tube, and, in this manner, deriving from the seat of the inflammation ; but there is one drawback attendant upon their employment,—in the motion of the body, consequent on their action, being apt to increase materially the sufferings of the patient. Care must, therefore, be taken to obviate this objection as far as possible. One of the best cathartics is croton oil. Or, stimulating injections may be thrown into the rectum. Cupping and leeching, although they are depletives, and, in this way, sedatives, are likewise revellents. When employed in the former capacity especially, they are generally applied to the temples, behind the ears, or on the nape of the neck ; but, at other times, where the joint operation has been particularly demanded, the French practitioners, more especially, frequently apply the leeches around the anus, and the author has often seen marked advantage from this course.

Amongst the revellents must be ranked mercurials, which have, by many, been esteemed powerful auxiliaries in encephalitis, especially in meningitis, as in other inflammations of serous membranes ; but their beneficial agency has been denied. In acute encephalitis, it is not easy to affect the system with them, either when given internally, or applied in the form of friction ; but in the chronic stage, the new action, induced by them, is often sufficient to break in upon the chain of morbid acts, and accomplish a complete cure. To affect the system by them, less inconvenience is induced by the internal administration of calomel, than by friction ; and alone, or combined with the use of calomel, the cuts made by the scarificator, or the denuded surface from the application of a blister, may be dressed with mercurial ointment.

R.—Hydrargyr. chlorid. mit. gr. j.  
 Confect. rosæ, seu  
 Micæ panis q. s. ut fiat pilula.  
 Dose, one, three times a day.

Revellents applied to the skin,—as blisters and sinapisms to the nape of the neck,—are most valuable auxiliaries in the treatment, especially when the excitement has been somewhat subdued by the action of sedatives; and, *à fortiori*, in the latter stages, when the patient has sunk into a state of coma or general paralysis. Whilst the inflammatory action runs high, it is well not to apply the blister to the shaved head, inasmuch as the irritation excited on the surface of the scalp may be transmitted to the brain and add to the inflammation; but in the after periods, when a typhoid condition has supervened, and it may be desirable to arouse the organic actions in the encephalon, the surface of the head may be an appropriate place for the application of our revellents. It is scarcely necessary to say, that the head should be kept raised; and whilst cold is applied to it, sinapisms may be directed to the feet; or, whilst the *douche* is used in the manner advised above, the feet may be put into a hot or sinapised pediluvium.

Everything, that can disturb the patient, mentally or corporeally, must be carefully interdicted. For this purpose, the chamber should be kept dark; all noise in the house or street be excluded, and abstinence be enjoined during the active period: the use of ice, as before advised, and of lemonade, or toast water, will at first be sufficient; and, subsequently, barley water, and the diet ordinarily inculcated in inflammatory affections.

2. *Chronic form.*—The phenomena, presented by chronic encephalitis, are strikingly analogous to those of the acute form, and the anatomical characters, presented by it, are much the same. It is to be expected, that on dissection evidences of induration or suppuration may be more marked; and the abscesses have usually had time sufficient to be encysted, or to have a cellular or serous tissue lining them.

**Treatment.**—The treatment of chronic encephalitis will consist in revulsive bleedings by cupping or leeches, and by general bloodletting; should the system seem to require it. Intermittent counter-irritation or revulsion, by successive blistering to the nape of the neck, applying another blister, after the effects of its predecessor have passed away, and the employment of mercurials, in the manner before recommended, constitute the main features of the treatment. The regimen must consist in keeping the head as much as possible elevated, and cool, whilst the feet are kept warm, either by appropriate clothing, or by excitants applied to them. The diet must be farinaceous,—as arrow-root, sago, or tapioca, and gradually, animal food;—the quantity being regulated by the diminution of the disease, and the restored powers of the individual.

## 2. *Myelitis.*

**SYNON.** Inflammatio medullæ spinalis, Notamylitis, Spinitis, Rachialgitis (of some); *Fr.* Myélite, Inflammation de la moëlle épinière ou rachidienne; *Ger.* Rückenmarkentzündung, Entzündung des Rückenmarks.

Myelitis or inflammation of the spinal marrow may exist, like other inflammations, in its acute and chronic forms, but they do not differ more from each other in symptoms or treatment than do acute and chronic encephalitis.

**Diagnosis.**—The spinal marrow, being constituted of columns or

tracts for motion and sensation, but not for the higher functions of intellectuality, delirium or perversion of the mental powers is not to be expected. Disorders in the movements are the most striking phenomena, especially when the inflammation attacks the anterior or motor tract of the medulla. In these cases, the effects upon the muscles are most varied;—spasms or permanent contractions, sometimes of one, at others, of many muscles, with or without paralysis in the parts that receive their nerves either from the infected portion of the marrow, or from below it. The author had recently under his charge a female labouring under chronic inflammation of the base of the brain, and probably also of the anterior portion of the medulla. The symptoms, in the first instance, were those of encephalitis—more especially of the left side of the base of the brain; which was accompanied by hemiplegia of the right side: subsequently, the affection of the brain passed over to the right side, and partial hemiplegia of the left side supervened. The spasms and contractions of different muscles were, in this case, marked and distressing. It presented, in addition, all the phenomena that belong to encephalic myelitis. It has been conceived, that when the inflammation is seated in the meninges of the marrow, constituting *spinal meningitis* or *meningeal myelitis*, the symptoms will be more those of irritation of the spinal marrow or of spasm; whilst myelitis proper, or inflammation of the medulla, will be indicated more by symptoms of destruction of the medulla or paralysis; but the distinction—if it exist at all—is not easily made, and we have not observations enough for the differential diagnosis.

When the posterior tract of the spinal marrow is inflamed, we should expect to find disorders of sensation to be the prominent phenomena. Pain is generally experienced in some portion of the spinal column, which is augmented when the patient moves, or bends the spine, or by percussion: the jar, communicated in this way, is appreciated, but no pressure along the spinous processes can aid us in the diagnosis;—as well might we press upon the cranium to discover whether the brain be affected with inflammation. The pain sometimes extends down the back and extremities, following the course of the great nervous trunks, and, as in other affections of the nervous structure, it may be continued or intermittent: it is often presumed to be rheumatic or neuralgic; and rheumatic and neuralgic pains are doubtless frequently attributed, most erroneously, to inflammation of the medulla. At other times, sensation is destroyed in the parts that receive their nerves from the inflamed portion of the medulla, or it may be impaired in the first instance, as indicated by numbness and formication in the fingers, or other portion of the extremities; and these symptoms may go on augmenting, until ultimately there is total insensibility. The nutritive functions are also disordered. At times, there is difficulty in deglutition, the reflex function being affected in the part of the medulla labouring under inflammation, and this may be one of the first evidences of myelitis. It rarely happens that the digestive operations are not retarded; and, accordingly, constipation is a common concomitant. The urine is, in many cases, much the same

as in encephalitis. It is red, acid, and sometimes thick and sedimentary.

In inflammatory affections of the brain, and still more in those of the spinal cord, especially in chronic cases, the kidneys and bladder sympathize greatly, and the latter is sometimes paralysed. The character of the urine then changes materially: it loses its acid reaction, and its colour becomes clearer: at the period of its excretion, it is either slightly acid or neutral, and in a very short time becomes alkaline in consequence of the formation of carbonate of ammonia. When first discharged, it is clear, generally of a light-yellow colour, and of a rather unpleasant odour. If allowed to stand, a glistening pellicle often forms very quickly on the surface, consisting partly of crystals of ammoniaco-magnesian phosphate, and partly of amorphous phosphate of lime, as may be seen by the microscope. The presence of ammonia may also be recognised by the odour and by test paper. After a time, the urine becomes turbid, and deposits a sediment of earthy phosphates and mucus, which assumes, at times, a purulent appearance, and becomes tough and viscid in proportion to the quantity of mucus which is present. The odour is then strongly ammoniacal and often stinking and putrescent; and on the addition of chlorohydric acid, a well-marked effervescence is produced by the liberation of carbonic acid. Cases have, however, been observed in which the urine was ammoniacal at the time of its discharge from the bladder (*Simon*).

Where the disease is very active, the circulation is greatly affected, as in other acute phlegmasiæ; but myelitis may exist to a limited extent, and yet the pulse aid little, if at all, in the diagnosis. Commonly, where the upper portion of the medulla is the seat of inflammation, the respiratory function is disordered; inspiration becomes difficult, or almost impracticable; the diaphragm contracts irregularly and spasmodically, so that the patient is distressed with constant hiccup, and, in this way, asphyxia may be gradually induced. Where the mischief is seated lower down, and especially if it be chronic, the urinary and genital organs lose their power, so that retention of urine and impotence result. At other times, it is affirmed, the genital organs are greatly excited, with tendency to priapism,—facts, which, as has been remarked, by M. Andral, confirm certain experiments of physiologists, in which the same effects were induced by mechanically irritating portions of the spinal marrow. In the pregnant female, there is, at times, inertia of the uterus; whilst, at others, the uterus contracts well upon its contents, and delivery has been easily accomplished.

After all, it must be admitted, that the diagnosis of myelitis is not easy. The chronic form especially may be confounded with neuralgia, hysteria, and the various phenomena that have been classed by some writers under the head of *Spinal Irritation*, *Neuralgia spinalis*, *Notalgia*; Ger. *Neuralgie des Rückenmarks*, *Spinalneuralgie*. It fortunately, however, happens, that the revulsive treatment is equally well adapted for all those cases.

The duration of the disease is variable, from a few days to weeks and months; if it be to a slight extent, it may terminate favourably, and commonly does so; but, when violent, it is apt to extend to the

brain, and to destroy. At other times, as already remarked, it induces asphyxia. In the chronic form, the whole system of nutrition may become impaired, so that the patient falls into a state of atrophy, under which he is gradually worn out.

**Causes.**—The causes of myelitis are of the same nature as those of encephalitis:—blows, falls, or mechanical violence of some kind, or it may result from irregularity of capillary action owing to exposure to cold and moisture—like other inflammations.

**Pathological Characters.**—These, also, are precisely identical with those of encephalitis. They are injection, tumefaction, softening, supuration, and induration. The softening and breaking down of the medulla sometimes goes to the extent of destroying its continuity, so that the parts of the body, which receive their nerves from the affected portion of the medulla, or beneath it, are irrecoverably paralysed. The morbid appearances may extend over the whole marrow; and, at times, even to the brain, so that encephalitis and myelitis may both exist; but more frequently it is partial—*cervical, dorsal, or lumbar*.

The whole substance of the medulla may be found affected, or the appearances may be confined to the anterior, or to the posterior columns; the gray and white substances may be both implicated, but it would appear, that the former is so more frequently. When the gray substance is softened and broken down, a canal may be found in the midst of the medulla.

In chronic myelitis, induration is a common morbid appearance.

**Treatment.**—The same plan of treatment may be used as in encephalitis. When the disease is very acute, blood may be freely drawn from the general system: but, usually, cupping or leeching along the vertebral column is sufficient; and, in this way, we have both depleting and revellent effects. Where the affection is still less active, cupping, without the abstraction of much blood, may be practised as often as the judgment of the practitioner may suggest.

In the *chronic* form, we trust to revellents almost wholly. Issues and setons were at one time much used, but since it has been admitted, that the good effects exerted by them are dependent upon the counter-irritation, rather than upon the discharge, the intermittent irritation, produced by the moxa, or strong ammoniated lotions, has been preferred; or, blisters are applied to the sides of the vertebral column, allowed to heal, and then repeated. To permanent irritation the system becomes somewhat accustomed, so that it loses its effect, whilst intermittent irritation always makes new—and, in appropriate cases, salutary—impressions.

The following case of myelitis, which passed, cured, from the author's care, will elucidate the method of treatment. A man 34 years of age, at the time when he came under medical management, was unable to walk without the aid of a cane. About 15 months previously, he was suddenly attacked with loss of power of motion in the right leg, for which he used various stimulating liniments, and recovered in the course of a few months, so far as to be able to resume his ordinary occupation. In a short time afterwards, his left leg became similarly affected; and the diminution of motion and sensation existed, extend-

ing up as far as the hip. He now applied to a physician, who made use of the actual cautery to the lumbar region and along the course of the spine, which gave but temporary relief. On the 3d of August, 1839, he fell under the author's care; when he was immediately put upon a revellent treatment. Oil of turpentine was given internally to produce a derivative action on the kidney, and moxas were applied to the lumbar region, where the nerves branch off from the spinal cord.

R.—Olei terebinth. gtt. xxx.  
Mucilag. acaciæ fʒij.  
Aquæ cinnam. fʒiv.—M.

Dose, a fourth part, four times a day.

The moxas were repeated every other day, and on the 14th of August he had experienced much relief from them: still the pain was not wholly gone. He was then ordered the *lotio ammoniata fortior* of Dr. Granville;—a piece of flannel being soaked in it and applied on each side of the spine for five or six minutes, by which vesication was effected, and with immense relief: this was repeated a few days afterwards, and, on the 7th of September, he was discharged entirely cured.

R.—Liq. ammon. fortiss. fʒx.  
Spirit. rorismar. fʒss.  
— camphor. fʒij.—M.

For the formation of these constituents of the prescription, as well as of the moxas mentioned above, see the author's *New Remedies*, 5th edit. p. 205, Philad. 1846.

Along with other revulsives in chronic myelitis, douches of tepid or cold water may be applied over the vertebral region; and in both the acute and chronic forms, cathartics may be administered with the view of inducing their revellent influence.

As regards the diet;—in the acute form it must be regulated as in acute encephalitis; in the chronic, it must be moderate and free from every excitant admixture: the patient must be kept in the horizontal posture, and in perfect mental and corporeal quietude.

#### b. *Inflammation of the membranes of the nervous centres.*

SYNON. Meningitis, Encephalitis peripherica, E. membranosa; Fr. Méningite, Inflammation de la Membrane séreuse céphalorachidienne; Ger. Hirnhautentzündung.

Inflammation of the meninges of the brain, including, as already remarked, the dura mater, arachnoid, and pia mater, has received great attention from modern pathologists; and for a time it was maintained, that their diseases could be readily diagnosticated from those of the neurine which they invest. Almost all the cerebral affections—from the slight convulsions of infancy, to the mental alienation of the adult—in accordance with the views of certain pathological writers, were considered to be arachnitis or inflammation of the arachnoid. When, again, it was recollected, that the pia mater is in immediate contact with the brain, and that it presents the greatest vascularity, and is frequently the seat of lesions, whilst the arachnoid remains transparent, it was regarded as the main seat of many cerebral diseases. The dura mater—a fibrous membrane—being rarely affected except by fungous tumour, ossification, and adhesions—is, by common consent, regarded as but little implicated in disease. It must obviously, however, be a matter of extreme difficulty to decide upon the precise membrane that



is affected: indeed, it rarely, perhaps, happens, that they are diseased singly; and still more rarely, that the part of the brain in contact with them is not concerned also. "In our days," says a recent writer, M. Piorry, "the idea is entertained, that practically it is always exceedingly difficult, to say the least, to tell precisely, during life, what is the cerebral membrane principally concerned; and we need not hesitate to go farther, and to assert, that it is equally impossible to determine, whether it be the meninges themselves that are diseased, or rather the portion of the brain in contact with them. I am well aware, that pathological anatomy finds more lesions in the meninges than in the brain, but this is owing to the different texture of the parts;"—and he concludes, "that meningopathy or disease of the meninges cannot be isolated from superficial encephalopathy or disease of the surface of the brain." Some writers, indeed, go farther than this, and affirm, that our knowledge is not sufficiently matured to enable us to say with confidence, what symptoms indicate inflammation of the substance of the brain as distinguished from that of its membranes; and hence, encephalitis and meningitis have not unfrequently been treated as a single affection.

These remarks are strictly in accordance with the author's observation; and hence, as suggested by M. Piorry, the disease is less meningitis than *meningo-cephalitis* or inflammation of the membranes and brain.

#### I. *Acute Meningitis.*

**Diagnosis.**—The symptoms, usually assigned to this affection, are the following:—Generally, there is pain of a more or less acute character in different parts of the head; commonly, towards the forehead and the parietal regions; and, occasionally, at the top of the head, and along the sides of the median line. The character of the pain varies: in some, it is the feeling of enormous weight on the cranium; in others, of violent shootings, either continuously or in paroxysms. At times, the pain is so violent, that the slightest noise or movement of the body excites the most intense suffering. In one hundred and four recorded cases, according to MM. Parent-Duchatelet, Dance, and Andral, cephalalgia was noted seventy-eight times. It would not, therefore, appear to be a universal concomitant, and consequently, a diagnostic symptom.

It has been remarked by M. Andral, that, in some cases, the pain was augmented by the slightest pressure on the scalp; but, as a general rule, this is an indication rather of the neuralgic than of the inflammatory headache, and it has been as categorically affirmed by another eminent author on diagnosis, already cited—M. Piorry—that the pain is *not* augmented by pressure on the integuments. Along with the violent headache, there is increased heat of the integuments of the head, and of the surface generally; delirium, more or less violent, and at times furious; with spasmodic or tetanic contractions of the muscles of the head and trunk; contraction and dilatation—at times continuous, and at others alternate—of the pupils; with, occasionally, more or less deviation of the eyes. Most commonly, however, the pupil is

contracted during the early period of the disease ; and, in the advanced stage, especially if effusion have taken place into the ventricles, it is permanently dilated,—the iris not responding to the light, and vision being wholly abolished. Similar observations are applicable to the hearing, which is generally painfully acute at first, and more or less depraved or perverted ; and may, subsequently, be greatly impaired or wholly destroyed. It is admitted, however, that these various alterations of sensibility in acute meningitis are neither constant, nor necessarily associated with the existence of any particular form of the disease. In almost all cases, there is great delirium. It is, indeed, the most constant of the symptoms. It varies much in character, being sometimes violent, but, at others, moderate, as in other encephalic diseases of which delirium is so constant a symptom. It rarely appears at the commencement of meningitis, being preceded by the headache in the vast majority of cases. Occasionally, but rarely, coma exists at an early period. More commonly, the delirium subsides into this alarming condition, which is often symptomatic of effusion into the ventricles. The urine of acute meningitis has been examined. It presents the characters of that of the phlegmasiæ in general. M. Schönlein describes it as being of a dark-red colour, very like brown beer. The secretion is usually scanty—frequently only from eight to nine ounces in the twenty-four hours ; has a strong acid reaction ; and the specific gravity—and, consequently, the amount of solid residue—is high. In four cases, observed by M. Becquerel, the mean specific gravity was 1025·2 ; sediments of uric acid sometimes occurred spontaneously, and were, at others, induced by the addition of nitric acid. In two cases, he detected albumen. M. Schönlein states, that towards recovery the urine is secreted more abundantly, and sometimes deposits purulent sediments.

Along with these functional phenomena, there is almost always great restlessness, which is often general, but at times confined to particular parts of the body,—as to one upper or lower extremity, or to the head, which is continually tossed from side to side. At other times, subsultus tendinum, and general or partial tremors are present ; and convulsions are esteemed to be one of the most common phenomena. These may be general or partial, but more frequently the last ; and they affect especially the eyeballs, eyelids, face, lips, and extremities. The tongue is occasionally affected with convulsions, and grinding the teeth is a common phenomenon. Tonic spasms are also witnessed,—for example, permanent flexure of the forearm on the arm, which may occur in both sides at once or in one only ; or the head may be thrown back, or to one side, and held there permanently. Occasionally, too, tetanic stiffness is observed in the neck, trunk, or limbs,—with, at times, trismus, and permanent curvature of the body to the right or left. With these symptoms, immediately dependent upon the local lesions, the organic functions are more or less concerned ; but their condition does not differ from that which we notice in encephalitis, and, indeed, in inflammation generally.

M. Andral considers, that acute meningitis usually observes three periods,—in the *first*, there is headache, with vomiting, and frequently

pyrexia; the *second* is characterized by delirium and different disorders of motility; and the *third* by coma and a state of collapse, more or less profound; but it is obvious, that these characters are totally inadequate to distinguish meningitis or meningo-cephalitis from encephalitis, and the fact corroborates the remarks already made in regard to the insufficiency of all the functional phenomena to indicate the precise part of the encephalon, which is affected with meningitis.

It has been the custom with most of the English and American writers to separate the consideration of *Hydrocephalus acutus*,—(SYNON. *Encephalitis exsudatoria*, *E. exsudativa*, *Arachnoiditis exsudativa*, *Encephalostasis Infantum*, *Encephalitis seu Meningitis Infantum*, *Morbus cerebrius Whyttii*, *Apoplexia hydrocephalica Infantum*, *Enteroccephalopyra Infantum*, *Hydrophlogosis ventriculorum cerebri*, *Febris hydrocephalica*, *Encephalochysis*; Ger. *Hitzige Hirnwassersucht*, *Gehirnentzündung der Kinder*, *Hitziger innerer Wasserkopf*, *Bösartige Gehirnkrankheit der Kinder*, *Gehirnwassererguss*, *acute Gehirnhöhlenwassersucht*, *Hydrophlogose des Gehirns*, *Wasserschlag*,)—as it has been somewhat unfortunately termed, from meningo-cephalitis,—which it really is, and sometimes of an exceedingly acute character,—requiring the most active treatment: but, at others, more subacute, connected with the development of tubercles, and constituting *tubercular meningitis*, *Encephalostromosis*, *Meningitis tuberculosa*; Fr. *Méningite tuberculeuse* ou *granuleuse*; Ger. *Tuberculosis des Gehirns*. Most of the more modern French and German pathologists consider it more properly under meningitis; and it is certain, that all the symptoms, which have been considered to denote the presence of effused fluid, may exist, and yet there may be no fluid effused. This form of the disease generally occurs in young children, and its presence may be suspected by the existence of the ordinary signs of encephalic inflammation. During the first days, the child generally vomits,—a symptom, which almost invariably accompanies all serious affections of the encephalon; and the occurrence of which causes the surgeon to watch a case narrowly, where a severe blow has been received on the head, in order that he may meet any symptoms of cephalitis as they present themselves. Sooner or later, the child exhibits signs of stupor; lies, perhaps, more or less comatose, and shrieks out in his sleep, or at the moment of awaking; the eyes exhibit more or less convulsive movement; and frequently they are turned upwards and fixed on the ceiling; the face is alternately flushed and pale, and there are often marked remissions in the febrile phenomena.

Attempts have been made to judge, from the particular symptoms, of the precise part of the meninges that are affected. Some have conceived, that when meningitis affects the surface of the hemispheres, it is chiefly indicated by pain in the frontal or parietal region, and by delirium, and greater or less derangement of the mental faculties;—the delirium indicating the period of active inflammation; and the abolition of the mental faculties at a later period indicating the destruction or compression of the gray substance of the brain by effused fluid. Meningitis of the base of the brain, from the orbital arches backwards, is conceived to be mainly characterized by muscular contractions of the

trunks and eyes, throwing the head backwards, change in the shape and movement of the iris, grinding of the teeth, stupor broken by convulsions; and, at a later period, loss of all sensation. Meningitis of the ventricles is considered to present the greater part of the preceding symptoms, and, in addition, more speedy disturbance of vision with phenomena of cerebral compression; but notwithstanding the assertion of those who believe, that meningitis of the different parts of the encephalon may be diagnosticated by the symptoms described above, it is but too true, that it is almost impossible to pronounce positively during life on this matter, and this is the view embraced by the best pathologists. Fortunately, this is not a matter of moment in practice; meningitis—no matter where situate—requiring precisely the same treatment.

The duration of meningo-cephalitis is very variable. At times, it terminates fatally in about a week; but, at others, not until the end of three or four weeks. It is always a serious affection, although much under the power of the therapist, if he be called early, and meet it in an appropriate manner. The form of the disease which is tubercular, is of most unfavourable prognosis.

**Causes.**—These are essentially the same as those of encephalitis. A predisposition would appear, however, to be laid in the tuberculous and the scrophulous diathesis. It is certainly more frequent in infancy than at any other period; and it has been affirmed, that girls are more liable to it than boys; but statistical evidence is wanting. According to the census of Ireland for 1841, the deaths from hydrocephalus were in the ratio of 100 males to 78·93 females.

It occurs, it is said, epidemically in certain years, and at certain seasons; whilst it is at other times uncommon for a long period. An epidemic of this kind,—which will be referred to more particularly hereafter,—prevailed, according to M. Wunschendorff, during the first months of the year 1841, at Versailles, Rochfort, Metz, and Strasburg. A narrative of the disease, in the last town, has been published, from which it appears, that after having reigned exclusively amongst the soldiers of the garrison, the inhabitants of the city became affected. During a period of four months and a half, forty patients were admitted, of whom twenty-one died. It would appear to be more common in spring and autumn, than in winter or summer. It is affirmed, too, to supervene occasionally during the existence of phlegmasiæ of the serous membranes.

**Pathological Characters.**—It rarely happens, that the dura mater exhibits evidences of active inflammation except in traumatic cases, when all the ordinary pathological appearances may be met with. Occasionally, pus is found effused between it and the skull, or between it and the arachnoid. In cases in which the inflammation has continued longer, tumours are sometimes observed, and heterologous formations of various kinds. Bony points are not unfrequently found in different parts of the dura mater, and especially in the falx cerebri. Far more frequently, morbid appearances are observed in the arachnoid; and this is a reason why arachnitis is considered by some to be almost as extensive in its signification, judging from observed phenomena, as meningitis. Under the membrane, there may be more or

less effusion of a turbid, milky, serous fluid containing purulent flocculi, or false membranes, which may or may not have become organized, may be seen investing one of its free surfaces, or passing, in the form of firm bands, from one part of it to another. It is remarkable, however, that the membrane itself does not become injected, changed in colour, or thickened. Effusions of serum or of pus—as the result of arachnitis—are more seen in the ventricles, than in the great cavity of the arachnoid. The morbid appearances of the pia mater are, however, much more common than those of either of the other meninges. Besides being the seat of infiltration of serous fluid or of pus, it may be greatly indurated, and adhesions may form between it and the arachnoid, particularly where the latter passes from one convolution to another. Cartilaginous, osseous, tuberculous, and other formations, may likewise be met with. These morbid appearances may be found in any part of the encephalon or spinal marrow.

Of late years, the meningitis, that occurs so frequently in young children, and is generally designated as *hydrocephalus acutus*, has been ascribed to a deposition of tubercular granulations on the under surface of the cerebral layer of the arachnoid membrane, and has been regarded as essentially strumous in its character; and there can be no doubt, that many cases are of this nature. According to MM. Rilliet and Barthez, M. Papavoine was probably the first, in 1830 to establish the tubercular nature of this form of meningitis. Afterwards, MM. Fabre and Constant presented a memoir on the same subject, which was crowned by the Institute. In 1834, Dr. Gerhard, of Philadelphia, and in 1833 and 1835, M. Ruzf, published their observations on the subject. "It was not known," says Dr. Gerhard, "previously to the researches of Dr. Ruzf, and myself, that the tuberculous character of the disease was anything but a mere complication. Thus far the researches of Dance had extended, and it was taught by M. Guernsent at the children's hospital, that the granular, or (as we now term it) tuberculous meningitis, was a variety of the disease. The physicians and students, who had followed the practice of the children's hospital, had of course become familiar with the fact, that tubercles were occasionally found in the pia mater; and this circumstance, which was well known to M. Constant, as well as to others, led a physician, who assisted in preparing his notes upon this subject, to claim a priority, which he himself would have been too conscientious to have asserted while living."

An inaugural dissertation by M. Piet, published in 1836, is highly spoken of by MM. Rilliet and Barthez. These gentlemen regard tubercular meningitis to be characterized anatomically as follows. *First*, By a deposition of tubercular matter in the meshes of the pia mater, presenting itself in the form of flattened or round granulations disseminated in different parts of the hemispheres or base of the brain, often not larger than a pin's head, most frequently opaline or white, sometimes gray; semi-transparent; commonly isolated, sometimes congregated; in very rare cases, the granulations being the sole meningeal lesion. *Secondly*, By inflammation, characterized by a secretion of concrete pus, or of false membranes in the pia mater,

which is thickened, yellowish or greenish, friable, and sometimes adherent to the cerebral surface. This phlegmasia most commonly coincides with the tubercular granulations of the meninges. In rare cases, it is entirely independent of them. It commonly occupies the base of the brain. In 27 of 33 cases, MM. Rilliet and Barthez found the tubercles or granulations, and the phlegmasia of the pia mater associated: in 4 cases, the meningitis was not accompanied by any tubercular production of the encephalon; in 2 cases, the granulations or meningeal tubercles had not occasioned any phlegmasia. In all the cases, however, the symptoms were nearly identical. *Thirdly*, By a peculiar state of the arachnoid, which renders it slightly glutinous or pitchy (*poisseuse*) to the feel. *Fourthly*, By a white, creamy softening of the central parts of the brain, occupying, in the majority of cases, the septum lucidum and fornix, seldom extending to the inferior parietes of the ventricles. *Fifthly*, By an effusion of serum into the ventricles, varying from two to four fluidounces, and, at times, in much greater quantity. *Sixthly*, By a deposition of tubercular matter in the organs, generally at a slightly advanced stage, or when it has assumed the acute form.

It is not easy to distinguish tubercular from common meningitis of the subacute kind. It has been properly affirmed, indeed, that if we meet with a case of subacute meningitis in a child that has completed its first dentition, where the attack has not supervened suddenly in the midst of perfect health, under the influence of some evident physical cause, such as a severe injury of the head, or prolonged exposure to the sun, but, on the contrary, has been preceded by manifest signs of ill health, there is great reason to suspect that it is tuberculous, and the suspicion will be greatly strengthened, if there be, at the same time, evidences of a strumous or tuberculous diathesis, hereditary or acquired. It is proper, however, to add, that patients unquestionably present themselves with all the symptoms that are ascribed to acute hydrocephalus without any tubercles being present in the brain or its meninges; whilst, on the other hand, as affirmed by Dr. P. Hennis Green, tubercles may exist without there being any cerebral or other phenomena that could give occasion to more than a suspicion of their existence, and, in some cases, not even to that. In a recent memoir, indeed, M. Legendre has treated of the disease under two forms: one in which the tubercular element is latent, the encephalic symptoms being the first to excite attention; the other, which supervenes on some form of tubercular disease. The dependence of this form of meningitis upon the tubercular diathesis is decidedly exhibited by the result of his dissections. In 28 cases examined, he constantly found miliary granulations in other organs. In two cases, they were found in eight other organs; in three in seven; in six in six; in five in five; in six in four; in three in three; in one in two; and in two in only one. The relative frequency with which tubercles or granulations were found in other organs is expressed in the following table:—

In the lungs, - - - - -	27 times.
bronchial glands, - - - - -	24 "
spleen, - - - - -	18 "
digestive canal, - - - - -	13 "
liver, - - - - -	14 "
kidney, - - - - -	10 "
peritoneum, - - - - -	6 "
mesentery, - - - - -	6 "

**Treatment.**—This is essentially the same as that advised in encephalitis—bloodletting, general and local, carried at times to a great extent, the application of ice and of the cold *douche* to the head, whilst the feet are placed in sinapised pediluvia; cathartics; antimonials given so as to nauseate; blisters after the activity has been reduced; and mercurials. Some have esteemed the last agents, used in the way of friction, to be almost specific in cerebral inflammation, but a modern writer, M. Andral, asserts, that he has never seen any great effect induced by them, whether given internally or administered in the way of friction. Where benefit has been witnessed from the administration of calomel—which is the article usually prescribed—he thinks it ascribable rather to its acting as a cathartic than as a mercurial. In the last stages, where coma has supervened, and there is reason to suspect the existence of effusion into the cavities, mercurials, pushed so as to touch the mouth slightly, and blisters, are the agents on which the greatest reliance has to be placed.

The cold *douche* has generally been regarded as best adapted to the earlier stages of meningitis; but a recent writer, M. Münchmeyer, advises it at a later period of hydrocephalus acutus, when effusion, the consequence of inflammatory action, has taken place, and a tendency to paralysis exists. After the subsidence of the violent symptoms of the disease, and when the patient has sunk into a comatose state, with a pale countenance, occasionally suffused with a flush, dilated pupils, strabismus, and slow pulse, he has found the revellent action of the cold *douche*, poured on the patient's head for a minute or two, in a moderate stream, from the height of five or six feet, of excellent service. The immediate effect of the cold affusion has been, that the patient has awoke from his comatose condition, and begun to cry violently, which he has continued to do so long as water was poured upon him. He has afterwards appeared exhausted and pale, the skin being cool, the pulse small and very frequent; but, when placed in bed, he has fallen into a doze, the pulse has become more regular, and the warmth of the surface has returned.

In the subacute form of meningitis, less activity of treatment is necessary; but the main management is the same as in the acute.

Iodide of potassium has been recommended in large doses in cases of acute hydrocephalus when the ordinary remedies have failed, and even when paralysis has occurred, and death appeared to be impending; and many successful cases are reported. (*New Remedies*, 5th edit. p. 400, Philad. 1846.)

When the inflammation has been subdued, it is important to place the patient on low diet for a long time; to keep the head cool, the hair short, and to prevent indulgence in intellectual exertion, and over-

excitement, both mental and corporeal;—in short, to shun all sources of excitement, as the disease is very apt to recur.

*Acute meningitis of the spinal canal—méningite rachidienne*, of M. Piorry, *Perimyelitis, Meningitis spinalis, Myelitis peripherica, M. membranosa*; Ger. *Rückenmarkshautentzündung*—is very rare, and especially so as a distinct affection from that of the encephalon. It is described as being characterized by throwing the trunk backwards, by *contractures* or convulsions of the limbs, pains in the vertebral canal and in the limbs, with preservation of the intellectual faculties, when the meninges of the brain are not inflamed simultaneously.

The *treatment* is the same as in meningitis of the brain and cerebellum.

## 2. Chronic Meningitis.

This is not a common affection, and is said to have been well observed only in insane hospitals. It may be primary, or the sequel of the acute form.

**Diagnosis.**—After the symptoms of cerebral hyperæmia, or of acute meningitis, cephalalgia is experienced, with more or less intellectual derangement, and irregularity in the movements, so that the patient staggers,—symptoms, which may continue for weeks and even years. In the second stage, the delirium is more general, and there is always extreme agitation, and desire for motion; but the movements become more embarrassed. In the third stage, the intellect is wholly annihilated; all power of motion is lost, and paralysis results which may be general or partial. The patient is then in a complete state of immobility, in which the muscles are atrophied: the nutritive functions now become greatly disordered; and progressive emaciation, diarrhœa, and more or less bronchial irritation commonly supervene. The duration of the disease varies from one to several months, or even years. Of 151 cases, observed at Charenton, 65, according to M. Andral, lasted from a month to a year; 81 from one to six years; and 5 from six to twelve.

**Causes.**—Chronic meningitis is said to attack males more frequently than females. It would seem to have been rarely seen in infancy. It is also uncommon between the ages of 20 and 25; but more common between 25 and 30; and attains the maximum of frequency at from 30 to 50. As in insanity, a predisposition to it would seem to lie in organization, for it appears in some families more than in others, and more in the children of parents who have suffered from it. It is sometimes induced by powerful emotions; and—it is affirmed—by the abuse of alcoholic liquors.

**Pathological Characters.**—These are often the same as those of acute meningitis—redness, thickening, effusion of various fluids, false membranes establishing adhesions in different places, and, occasionally, cartilaginous, osseous, and other depositions. As it generally terminates by the supervention of some other disease—apoplexy, encephalitis, acute meningitis, or softening,—the evidences of the complication will be manifest on dissection.



**Treatment.**—This is simple, but unhappily of little efficacy. Blood-letting—if used at all—can rarely be required from the general system, unless at the very onset of the disease; and then local bloodletting by cupping is preferable. Later on, it cannot often be necessary. Revellents—as blisters to the nape of the neck, or a seton, or repeated applications of the moxa, with occasional brisk cathartics—constitute the essential part of the management. In protracted cases, where circumstances will admit of it, change of air, with appropriate exercise, and careful moral management, as advised under Insanity, afford the best prospects of relief.

### 3. *Cerebro-spinal Meningitis.*

During the last few years, an alarmingly fatal disease,—termed by those who have described it, *cerebro-spinal meningitis*,—has prevailed in the different towns of France, attacking, principally, the common soldiers of the garrisons of Versailles, Lyons, Avignon, Bayonne, Metz, Strasburg, Nancy, &c. The functional phenomena resembled very closely those of inflammation of the membranes of the brain and spinal cord in sporadic cases. In regard to treatment, M. Faure-Villar, of Versailles, tried every rational method, and considers no one to be superior to the rest. Of 154 cases which he treated, 66 terminated fatally. M. Forget, of Strasburg, lost 24 out of 40; and M. Tourdes, also of Strasburg, states, that of 195 soldiers attacked, 122 died. A similar epidemic, according to Dr. Gillkrest, prevailed among the civil population of Gibraltar, from January to May, 1844. Of 16,000 inhabitants, 450 were attacked, of whom 190 had symptoms of greater or less severity, and 42 died. The ordinary antiphlogistics, with mercury, constituted the treatment with many. In other cases, sulphate of quinia and opium were given with advantage.

A similar disease would seem to have prevailed in Ireland in 1846; and in Mississippi, Tennessee, and Missouri, in the beginning of the year 1847. Descriptions have been given of it as it appeared in the two former States, by Dr. Hicks of Vicksburg, and by Dr. B. F. Taylor, of Whiteville, Tennessee. The phenomena, presented by it in Missouri, are thus given in a letter to the author, by Dr. W. C. Philips, of Rochefort, Boon County, Missouri, dated the thirteenth of September, 1847.

**Diagnosis.**—“There are no invariable symptoms attending it. Generally, the patient has been in ordinary health, pursuing his accustomed avocations, and the first indication he has of the approach of the disease is, perhaps, a pain in the hand, foot, legs, eye, brain, lungs, stomach or bowels. Any one, or a number of these locations in connexion may be permanently affected. At times, there is a sensation as if cords were being drawn at the back of the neck, so as to produce stiffness. In one case, there was contraction of the occipito-frontalis muscle, and of the muscles of the face. In many cases, there was so much soreness of the surface as to render the smallest amount of clothing intolerable. It was usually ushered in with a chill of variable intensity, succeeded by a similar reaction, and this reaction was followed in from three to twelve hours, by a second chill, and if disorganization had not previously taken place—which was often the case—it appeared to accompany, or immediately succeeded it. In many cases, there was ex-

cruciating pain in the arms, legs, and other parts of the body; and this pain, when situate in the limbs, was often accompanied by swelling of the joints, and more or less loss of the use of the limbs, with stiffness and inability to move them. These pains were sometimes permanent, but at others shifting from one point to another. The neck was often drawn backwards or forwards at an angle of almost  $45^\circ$  from its natural position, and so rigidly fixed, that it would appear as if it would break off if force were used to endeavour to cause it to resume its natural position. It was swollen, too, much beyond its usual size. The external surface was sometimes beautifully spotted; and in a few cases there was an exanthematous eruption. The nervous system was deeply involved,—as indicated by profound coma, wild and furious delirium, subsultus tendinum, apoplexy or paralysis. In one case, there was blindness of an eye, accompanied with constant pain of the head, and also swollen joints. It terminated fatally. The lungs were or were not implicated. The stomach was often the seat of nausea and vomiting. As regarded the bowels, there was nothing characteristic. In a few cases there was gastro-enteritis. Trismus occurred in one case; and in other cases there was inability to swallow anything, owing to the swollen and painful condition of the larynx and pharynx.”

**Causes.**—The affection was most common from ten to fifteen years of age; but it occurred at all periods of life. It resembled, in many respects, the prevailing disease of the country, which was, at the time, a modified form of pneumonia. In both, there was the same soreness of the surface. The chill ushering them in; the pneumonic symptoms and the swelling of the joints were similar, and the worst forms of the prevailing disease, and of this malignant epidemic were alike in their duration, termination, &c., whence Dr. Philips concluded, that they were produced by the same general cause, and that there existed local causes which gave it, in the localities where it prevailed, its malignant type. The disease was confined to a section of country in the Missouri river bottom, which was the seat of a great overflow in June, 1844, at which time an extensive layer of sand was deposited upon the soil, entombing large crops of vegetable matter. After the overflow, the bottom had been unusually healthy until last spring, whilst the rest of the country had suffered far more from disease than usual. Dr. Philips asks, “whether it would be philosophical or scientific, to say this overflow produced these local causes?” The prevalence of the disease in such different localities in different countries, would scarcely sanction our answering this affirmatively. Its causes are probably as inscrutable as those of endemic and epidemic diseases in general.

The prognosis was most unfavourable. “Five-sixths,”—says Dr. Philips,—“die. In many cases, it is death *ab initio*,—the fatal event generally occurring in from six hours to two days.”

The term *cerebro-spinal* appears to have been applied to it with propriety; as it clearly attacks, and in a marked manner, the gray matter of the spinal cord,—the nervous system of reflex actions. Dr. Hicks terms it *Myelitis petechialis*.

**Treatment.**—This, as already remarked, was too often fruitless. Large doses of opiates, combined with sulphate of quinia, and powerful revellents to the spine, appeared to be most indicated.

### III. ANÆMIA OF THE NERVOUS CENTRES.

SYNON. *Fr.* Anémie des Centres Nerveux.

The term *anæmia*—as elsewhere shown—has been applied, not to a total loss of blood in any part, for such a condition never can exist, but to paucity of blood,—what has been also termed *oligæmia*. In the sense in which it is used here, it means a great diminution in the quantity of the blood itself, or of the red corpuscles, and it is a pathological condition of deep interest, inasmuch as the symptoms induced by it may strikingly resemble those that are caused by hyperæmia. At one time, coma and convulsions were looked upon as unquestionable evidence, in all cases, of congestion of the encephalic vessels; but it is now known, that coma may exist independently of any polyæmia or hyperæmia of the encephalon; that it is occasionally induced by a condition the opposite to those, and that the administration of excitants may be required for the removal of symptoms closely resembling such as are treated, and treated satisfactorily, by bleeding and by ordinary depletives. The same may likewise be said of convulsions.

Anæmia of the nervous centres may exist along with general paucity, or impoverishment of the blood; or it may be produced by long-protracted disease, or by great loss of the vital fluid. At times, too, it occurs in acute diseases, as in scarlatina, in which, owing to hyperæmia occurring in other organs, there is a deficiency of blood in the vessels of the brain.

**Diagnosis.**—If we bleed an animal to death, we find, after a certain quantity of blood has been discharged, that it begins to totter, falls, and is attacked with convulsions similar to epilepsy. The same thing may occur in man, if the abstraction of blood be carried to too great an extent, or if it be too frequently and largely repeated; and the experiments of a distinguished surgeon, Sir A. Cooper, showed, that the tying of the two vertebral arteries in animals brought on various species of paralytic as well as spasmodic affections. Two cases of cerebral hemorrhage—*cerebral apoplexy*—have been published, by M. Laurent, which occurred in females recently delivered, and who had been rendered anæmic by profuse uterine hemorrhage. We can thus understand, that if anæmia should arise from any cause, convulsions may be the consequence; and it seems equally clear, that coma may supervene from the same condition of the encephalon. It is, however, in children, that we most commonly meet with cases of the kind, which it is not very easy to distinguish from hyperæmia. As a general rule, it may be laid down, that heaviness and drowsiness in children are dependent upon the latter pathological condition, and may be relieved by appropriate depletion: but if the child be drowsy, and at the same time feeble, cool, or cold, with a quick, weak pulse, we have reason to infer, that there is a state which may be aggravated, and perhaps hurried to a fatal termination, by bloodletting and other depletives. Most of the symptoms, indeed, of inflammation of the brain

may be induced by exhaustion—giving rise to the *hydrecephaloid disease* or *spurious hydrocephalus*, as it has been termed by Dr. M. Hall. In like manner, where convulsions occur in childhood with signs of increased vascular action, and determination towards the encephalon, the pathological state may be very different from that in which the same morbid phenomena are displayed along with a pale, cool surface and feeble circulatory powers,—a form of convulsions which is, perhaps, most commonly met with.

As remote effects of excessive loss of blood, we have great reaction which may frequently supervene in a few hours—as in the case of a parturient female, who has been almost drained of blood, and yet who may, in a short time afterwards, suffer under the most rending headache, with flushed face, throbbing of the carotids and temporals, which symptoms are not to be allayed by farther depletion, but can be immediately reduced by a full sedative dose of an opiate.

At times, in similar conditions of the encephalon, we meet with great cephalalgia, or sense of pressure in some part of the head, with intolerance of light and sound, sleeplessness, slight delirium with or without palpitations;—most of these indicating an inflammatory or hyperæmic condition of the encephalon, and yet all being aggravated by depletion even when carried to a slight extent only. The author has elsewhere (*General Therapeutics*, p. 399, Philad. 1836,) alluded to an interesting case of this kind, which he attended with his friend Dr. Smith of Baltimore, then his colleague in the University of Maryland. A similar condition of the encephalon is met with in long-protracted fevers, especially of the typhoid kind.

**Causes.**—These will be understood from what has been already said. Attention has, however, been directed by Drs. Corrigan and Robt. Law to affections of the brain, which are induced by a deficient supply of blood to the organ owing to disease either of the sigmoid or mitral valves: hence arises softening of the brain, a condition which Dr. Laws thinks, is identified—by the circumstance under which it takes place—with gangrene or death of a part consequent upon diminution of its due supply of blood, and requires a mode of treatment very different from that which is indicated when there is an excess of blood in the brain.

**Pathological Characters.**—The encephalon may be found pale, and the vessels containing an unusually small quantity of blood. The gray substance, it is affirmed, exhibits this appearance more frequently and decidedly than the white. As the blood, too, in anæmia, does not contain its usual proportion of fibrin and red particles, an effusion of watery fluid may be found at the surface and base of the brain, or in the ventricles, which may have taken place before dissolution, or be a transudation after death.

**Treatment.**—In the difficulty which sometimes exists in the differential diagnosis, the practitioner will have to be cautious, both in the use of depletives, and of excitants. He must cautiously feel his way; but if the surface be cool, and the powers of the circulation feeble, gentle stimulants—as small quantities of wine-whey, may be advisable; revellents—as sinapisms—may be applied to the pit of the sto-

mach; and, when signs of reaction come on, the excitants must be withdrawn. For the removal of the remote symptoms induced by loss of blood in the adult, narcotics, as before remarked, in sedative doses, may be found highly beneficial.

R.—Morphiæ sulph. gr. iss.  
Aquæ cinnam. fʒj.—M. et fiat haustus.

Or R.—Pulv. opii gr. iss.  
Confect. rosæ, q. s. ut fiat pilula.

The patient should be kept in a warm chamber, and in the horizontal posture; and small quantities of nutriment, in the shape of arrow-root, or of any of the amylaceous articles of diet, or panada, may be cautiously administered.

#### IV. HEMORRHAGE IN THE NERVOUS CENTRES.

SYNON. Fr. Hémorrhagie des Centres Nerveux.

This affection has been generally designated by the term *Apoplexy*—(SYNON. *Apoplexia*, *Carus apoplexia*, *Apoplexia sanguinea*, *A. cerebri sanguinea*, *Sanguinis ictus*, *Encephalorrhagia*, *Hæmorrhagia cerebri*; Fr. *Apoplexie*, *A. sanguine*, *Hémorrhagie cérébrale*, *Hémo-encéphalorrhagie* of Piorry; Ger. *Schlagfluss*, *Blutschlagfluss*, *Gehirnblutfluss*, *Gehirnblutschlag*;)—but, as remarked under the last head, they cannot be esteemed synonymous. All the signs of apoplexy may, indeed, be present without hemorrhage; and on the other hand, hemorrhage may occur without the ordinary symptoms of apoplexy.

Hemorrhage in some part of the encephalon is by no means uncommon; and this is probably owing to the encephalic vessels not being well supported by the parts in which they creep, so that transudation readily takes place through their parietes; for it is very rare for hemorrhage, in these cases, to be induced by rupture of a vessel; at least, no such appearances present themselves on dissection. It may occur in different parts of the nervous centres—either at the external surface, in the cavities, or in the substance of the nervous matter; but every part is not equally liable to it. When it takes place from the meninges of the brain, it may be seated between the dura mater and the skull; between the dura mater and the arachnoid; in the cavity—as it is termed—of the arachnoid; in the meshes of the pia mater at the periphery of the hemispheres, or in the ventricles; and it may exist alone, or along with cerebral hemorrhage. The symptoms, in such cases, will be those of compression—that is sudden loss of sensation, volition, and mental and moral manifestation. It has been ranked as a form of apoplexy, and termed *meningeal*: Fr. *Apoplexie méningée*, *Hémorrhagie méningée*.

The effusion takes place most frequently into the very substance of the brain. Of 386 cases, which have been published, it was seated in the part of the cerebral hemispheres, situate on a level with the corpora striata and the optic thalami, and at the same time in both those bodies—

In . . . . .	202 cases.
In the corpora striata, in . . . . .	61
In the optic thalami, in . . . . .	35
In the portion of the hemispheres above the centrum ovale of Vieussens, in . . . . .	27
In the lateral lobes of the cerebellum, in . . . . .	16
Anterior to the corpora striata, in . . . . .	10
In the mesocephalon, in . . . . .	9
In the spinal marrow, in . . . . .	8
Behind the optic thalami, posterior lobes, in . . . . .	7
In the median lobe of the cerebellum, in . . . . .	5
In the peduncles of the brain, in . . . . .	3
In one peduncle of the cerebellum, in . . . . .	1
In the corpora olivaria, in . . . . .	1
In the pituitary gland, in . . . . .	1
In the central white parts, . . . . .	0
	386

Although such is the record of cases given by M. Andral, hemorrhage is frequently seen both in the white and the gray portion of the encephalon. In a case of profuse hemorrhage, which was examined by the author, and was caused by severe concussion received from blows and a fall down stairs without fracture, the white portion of the hemispheres, above the level of the centrum ovale of Vieussens, was found torn in many places; and the cavities, thus formed, were filled with coagulated blood. It will be seen, however, from the above table, that hemorrhage above the centrum ovale of Vieussens is by no means common. In other cases, the superficial portions of the brain are the seat of the infiltrations; and we notice the effusion more especially in the anfractuosities.

Hemorrhage in the cerebellum is much less frequent. Of the 386 cases of encephalic hemorrhage mentioned above, it occurred in the cerebellum but 16 times. It is chiefly observed in the lateral lobes. Next to the cerebral hemispheres, it is most frequent in the mesocephalon. It has been rarely met with in the crura cerebri, or crura cerebelli; nor is it common in the spinal marrow. When it has taken place into the ventricles, it has been presumed, by M. Andral, that it may have been owing to laceration of the cerebral substance; and in the form of *meningeal apoplexy*, described by M. Serres, that the hemorrhage may have occurred in the pulp, and the blood subsequently have transuded through the membranes, but there seems to be no reason, why transudation might not take place through the vessels of the meninges in both cases, under favourable circumstances; whilst it must be admitted that it would be more easy into the substance of the encephalon, owing to the parts affording less support, and, therefore, admitting of more ready congestion.

The quantity of blood effused varies extremely; at times, it may not amount to more than the size of a pea and even less, and yet all the symptoms of hemorrhage may be well developed; whilst in other cases the effusion may be to a greater extent, and the signs be equivocal. It may have taken place, also, in various parts of the brain, so that there may be a multitude of small cavities containing liquid or coagulated blood; all of which may have occurred at the same or at different periods.

The appearance of the effused blood is very different, according to the time that may have elapsed since the hemorrhage. In general, there is found to be a striking diminution in the portion of fibrin, and an increase in the proportion of red particles. At first, it is an ordinary clot, with more or less fluid matter surrounding it, according to the condition of the blood at the time; but soon the colouring matter disappears, and a delicate cellular tissue is formed around the clot, from which a serous fluid is secreted, which softens the clot and favours its absorption; until, ultimately, the only evidence of previous hemorrhage may be the existence of the *apoplectic cell*, as it has been termed; or, the sides of the cellular membrane may come together, so that the evidences of hemorrhage may be effaced. The blood, as already remarked, is usually effused by transudation through the capillary vessels, but, in very rare cases, it supervenes on the rupture of a vessel. At times, in the seat of the hemorrhage an accidental tissue is observed, owing to the plastic lymph of the blood having become organized, and overrun with vessels; in these cases, the symptoms have been those of apoplexy, and the patients have remained hemiplegic.

Effusions of blood into the nervous centres must generally be connected with the condition of the containing vessels; sometimes, these have been observed to present a varicose appearance; and, at others, to be studded with osseous patches. They are doubtless, also, intimately associated with the state of the nervous substance in which they creep: frequently, this is found softened, and from the symptoms the softening probably preceded the hemorrhage, and was a great cause of it, owing to the diminished support it afforded to the vessels: at other times, the softening would appear to have been consecutive. The colour of the nervous substance around the effusion is commonly changed. It may be more or less red, or livid,—partly owing, perhaps, to some degree of injection of its vessels, to effusion of blood from them, or to simple imbibition. Occasionally, especially in old cases, the surrounding portions of the brain are indurated; and, at times, inflammation has occurred in them, and terminated in abscess.

**Diagnosis.**—Many of the symptoms are precursory, and indicate the state of hyperæmia or congestion before described; but occasionally these are entirely wanting. When once, however, the hemorrhage has taken place, the compression of the cerebral substance, caused by it, commonly induces symptoms, which cannot be mistaken. These are, loss of sensation, motion, and mental and moral manifestation. Prior to the hemorrhage, there may be headache, vertigo, and confusion, with numbness or sense of creeping in some part of the surface, and especially in that of the fingers or toes; with depravation of vision, the appearances of sparks or black spots, cobwebs or flashes of light, and more or less depravation of hearing—*tinnitus aurium* or *susurrus*,—and of smell and taste; but the two last senses rarely afford any functional phenomena that can guide us. These various symptoms exist in congestion, and they may be present for days and weeks, and even longer; but when hemorrhage has once taken place, the deprava-

vation or impairment of sensation terminates in its more or less entire abolition.

When the attack has been sudden, we may in vain attempt to arouse the individual to sensation; and as the immediate apoplectic effects pass away, the sensibility of the limb, affected with loss of motion—which we shall find is one of the permanent results of encephalic hemorrhage—generally continues impaired; sensation, too, in the paralysed portion of the body, is usually sooner restored than motion. Long before anatomical and physiological researches had discovered, that the voluntary muscles are supplied with nerves both of motion and sensation—distinct, although enveloped in the same nervous sheath,—pathology had indicated their independence, although unable to explain the phenomenon.

In severe cases, not only the encephalic but the true spinal nerves lose their impressibility, so that the contact of any body with the lining membrane of the mouth, or of the œsophagus, induces no muscular contraction; the sphincters, too, which belong to the true spinal systems in their nervous relations, lose their power, so that the contents of the various reservoirs are discharged involuntarily. The conjunctiva, which receives the fifth pair of nerves—a nerve endowed with the power of communicating both sensation and motion—is, at times, rendered insensible, so that the contact of the finger induces no irritation. At first, the sight may be entirely destroyed; but, as sensation returns, it may remain lost or be impaired in one eye only. This will usually be the eye of the paralysed side; but cases are on record, in which the eye of the opposite side has suffered. Such, however, have not fallen under the author's observation. Much dispute has arisen as to whether the optic nerves decussate, or simply come in contact at the chiasm; and the author has elsewhere shown, (*Human Physiology*, 6th edit., i. 197, Philada. 1846.) that pathological cases have been adduced on both sides of the question, and that experiment would appear to be in favour of decussation. Some, however, of the most respectable anatomists and physiologists maintain, that the decussation is partial, and concerns only the inner portions; and that the others—the outer—proceed onwards through the optic thalamus to the eye without any crossing. Under this view, cases of hemorrhage may produce loss of vision of the same or of the opposite side, according as the effusion implicates the portion of the nerve, the prolongation of which simply touches or crosses at the chiasm. It has been affirmed, that one condition of loss of vision is, that the extravasated blood shall be on the level of the commissure of the optic thalami: the upper portion of those ganglions, M. Serres asserts, might be affected without blindness resulting.

Loss of motion or *Paralysis*—*Carus paralysis*, *Resolutio nervorum*, *Palsy*; Fr. *Paralysie*; Ger. *Lähmung*, *Paralyse*,—is the almost universal effect of hemorrhage in the nervous centres. It has been before shown, that general paralysis may result from hyperæmia of the nervous centres, and pass off as the hyperæmia yields. The paralysis, however, which follows hemorrhage, generally comes on suddenly, concerns one-half the body, and remains more or less for the rest of the patient's life. In rare cases of cerebral hemorrhage there is no



paralysis. M. Andral refers to two examples, which, he says, are all that he knows. One of these was observed by M. Lenormand, in the service of Laënnec; and another was cited, in 1827, by M. Secrétin in an inaugural thesis. In the latter case, the person died without presenting any derangement of motility; and, on dissection, a clot, of the size of a hen's egg, was found at the posterior portion of the right cerebral hemisphere. To these cases the author may add a third. Mr. T——, a gentleman of Baltimore, was affected with a singular train of cerebral symptoms;—loss of sensation, volition, and every mental and moral manifestation, with twitchings of the muscles of the limbs: from these he recovered by copious bloodletting, which left, however, a high degree of impressibility, and tendency to relapse into the same condition: relapses did, indeed, take place for a short time, on two or three occasions, but he ultimately regained all his faculties. The symptoms were ascribed to hyperæmia of the encephalon, and no idea existed, that hemorrhage had occurred. Soon after one of his last attacks, the author was surprised to meet him in the street, when he expressed himself to have entirely recovered. On the same day, however, notwithstanding the cautions given him, he took a hearty supper, and a bottle of porter. In the night, the family were aroused by moanings proceeding from his chamber, when he was found in a condition of deep apoplectic coma. Blood was drawn from his arms, but it was evident, that all remedies must be vain, and, in the course of a few hours, he sank. On opening the brain, the meninges and cerebral substance were found much injected, and several ounces of blood were effused at the base of the brain, and on the mesocephalon. In the left corpus striatum, there was the appearance of previous hemorrhage: the greater portion of the colouring matter was absorbed, and extensive softening existed around the clot. This was evidently the lesion that had given rise to the symptoms from which he had recovered: the immediate cause of death was the extensive effusion.

A case has been related by Mr. Fowler, of a female, aged 60, who, whilst in feeble health, struck her head with violence against a hard object, which gave rise to no symptom indicative of injury or disease of the brain, yet she finally sank fourteen days after the blow. On dissection, the membranes of the brain appeared to be healthy, and the left hemisphere had its natural appearance; but on opening the right, several ounces of coagulated blood were discovered—the parietes of the cavity containing it being of the consistence of cream. In this case, the intellectual and moral faculties remained sound, and there was no loss of sensation or volition; yet the brain was extensively disorganized.

The degree, to which the paralysis is present, varies; at times, it is complete from the first; at others, it may consist in a simple heaviness of the limbs, or inability to grasp objects; but these symptoms go on augmenting, until complete hemiplegia is induced. They may, also, be the forerunners of the hemorrhagic effusion. It rarely happens, that all the limbs of the body are paralyzed, but we can understand, that such may be the case, whenever the hemorrhage has occurred in both hemispheres, or if the hemorrhage of one side have been so consider-

able as to compress the other. In the latter case, if the patient survives, the clot may be diminished by absorption, so that the compression may be removed, and then one half the body, corresponding with the hemisphere originally affected, will remain hemiplegic.

It has been long a matter of notoriety, that hemorrhage in one hemisphere of the brain produces paralysis of the opposite side of the body,—generally of both limbs; but, at times, of one only: the face, too, participates; and, as the muscles are paralyzed, the angle of the mouth is drawn upwards by the sound muscles of the opposite side. The cause of this general law of decussation has been anxiously sought for by the anatomist, and it is admitted, that at the portion of the medulla spinalis at which the medulla oblongata unites with the medulla spinalis proper, there is a crossing of the anterior pyramids, or of those connected with motion, by which the fact, it has been conceived, might be explained. It is obvious, however, that this arrangement would not well account for the face being paralyzed on the hemiplegic side. Its movements and sensations are under the presidency of the seventh pair and fifth pair of nerves, which arise from the mesocephalon above where the decussation is presumed to take place; and although we may admit, that such a decussation of the anterior pyramids exists, it is probable, that there may be a similar arrangement in other parts of the mesocephalon, or even of the brain and cerebellum themselves. As regards the cross effect of sensation, Sir Charles Bell, in the year 1835, described before the Royal Society a decussation connected with the posterior columns, or columns of sensation, but the accuracy of these dissections was doubted by eminent anatomists. Since then, an arrangement of the spinal columns has been described, which explains what before appeared unsatisfactory, and anomalous in pathology,—for example, the facts,—that the symptoms of encephalic lesion do not always take place on the opposite side of the body, but occur, at times, on the same side; that the loss of power and of sensation, although confined to one side, may exist in either the upper or lower extremity, but that both are not necessarily implicated; and that cases happen, which are altogether anomalous. Such having occurred to Mr. Hilton, and being totally incomprehensible to him, he carefully examined the continuation upwards of the anterior and posterior columns of the spinal marrow into the medulla oblongata, and found, that the decussation at the upper part of the spinal marrow belonged, in part, to the column for motion, and in part to the column for sensation; and farther, that the decussation is only partial with regard to either of those columns. But although rare—extremely rare—cases have occurred in which the paralysis has been observed on the same side as the encephalic lesion, the general law holds good, that in such cases there is a cross effect. An abstract of 16 cases has been given by M. Andral in which the hemorrhage was on the same side as the paralysis. None of these, however, were observed by him, nor has he himself witnessed any. No such case has fallen under the author's observation.

Attempts have been made to predict the seat of the encephalic hemorrhage, when the paralysis has affected one limb only; and nume-

rous researches in this direction have been made by some of the most distinguished of living French pathologists. When the lower extremity is paralyzed, the corpus striatum has been presumed to be the seat of the hemorrhage; when the upper, the thalamus nervi optici; but the number of observations cannot be regarded sufficient to establish the position, and it can only be determined by repeated dissections. It is probable, however, that the portion of the cerebral lobes, which form part of the base of the brain, and are prolongations of the anterior column or column of motion of the spinal marrow, may be concerned; and, accordingly, the attention of pathologists has been greatly directed to those parts, to account for different lesions of motion. It would not seem, that paralysis results from hemorrhage into the convolutions of the brain; although such cases are on record. When the hemorrhage occurs in the mesocephalon, it might be presumed, that all the limbs would be attacked with paralysis. Generally, indeed, the patient lies in a completely comatose state; but cases have presented themselves, in which hemiplegia alone was the consequence, probably owing to the effusion having taken place into one side only of the mesocephalon.

Hemorrhage into the cerebellum has given rise to questions equally interesting. It has been generally supposed, that the resulting paralysis should be on the same side as the hemorrhage,—seeing that the corpora restiformia, which concur in the formation of the cerebellum, do not decussate like the anterior pyramids. The facts, however, are, that the paralysis in cerebellous hemorrhage, as in cerebral hemorrhage, occurs in the opposite side of the body, yet there have been rare cases in which the paralysis was on the same side. Accurate anatomical observations by Mr. Solly are calculated to throw light on this subject. They would seem to show, that there is a direct communication between the motor tract of the spinal marrow and the cerebellum. The corpora pyramidalia have been generally supposed to be formed by the cuture mass of the anterior or motor columns of the spinal cord; but Mr. Solly shows, that not more than one half of the anterior columns enters into the composition of these bodies; and that another portion, which he terms the *antero-lateral column*, when traced on each side in its progress upwards, is found to cross the cord below the corpora olivaria, forming, after mutual decussation, the surface of the corpora restiformia, and, ultimately, being continuous with the cerebellum.

Paralysis may also be induced by hemorrhage into the spinal marrow, and the upper or lower extremities or both are affected according to the seat of the effusion: where hemorrhage has occurred in one of the anterior cords, hemiplegia has been the consequence, and this has been on the same side as the lesion. The symptoms of *Spinal apoplexy* or *Spinal hemorrhage*,—*Apoplexia myelitica seu medullaris seu spinalis*, *Myelorrhagia*: Fr. *Apoplexie de la Moëlle épinière*, *Hémato-rachis*, *Hémato-myélie*, *Hémo-myélorrhagie* (Piorry); Ger. *Rückenmarkschlag*, *Rückenmarksblutfluss*,—are, however, obscure. Dr. Abercrombie has detailed a case of convulsions in a child, thus induced, without paralysis, and he has cited similar cases from others.

Besides the limbs, other voluntary muscles are paralysed in hemorrhage of the encephalon. Paralysis of the muscles of the eyelids, especially of the levator palpebræ superioris, is not uncommonly a forerunner of cerebral hemorrhage, and occasionally it presents itself for days before the attack; so that due warning is given. Inability to raise the upper eyelid is always, indeed, a most formidable premonitor of serious cerebral affections of this kind. Of the paralysis of the muscles of the face, mention has already been made. It is on the same side as the loss of power over the limbs; the angle of the mouth of that side consequently drops, and when the individual smiles, the opposite angle alone is elevated. In some cases, the movements of the tongue are not affected; in others, all command over the organ is lost, and the patient is unable either to protrude it, or to articulate. In others, again, and most commonly perhaps, its movements are implicated, and, when protruded, it generally deviates towards the affected side: at times, however, although rarely, it is carried towards the opposite side,—differences which are explicable by the paralysis affecting certain muscles rather than others.

Many endeavours have been made to discover the portion of the encephalon that presides over speech, but the whole matter is enveloped in confusion. M. Bouillaud placed it in the anterior lobes of the brain; but, of 37 cases of cerebral hemorrhage seated there, the speech was lost in 21; preserved in 16; whilst in seven cases, seated in the posterior lobes,—the anterior being wholly unaffected,—speech was lost; and, in seven other cases, implicating the middle and posterior lobes only, the speech was equally lost. To prove how little is positively known on this matter, it need only be remarked, that by M. Récamier, the encephalic seat of speech has been placed in the centrum ovale of Vieussens; by M. Serres, in the corpus striatum; and, by M. Foville, in the cornu ammonis. The fact appears to be, that speech, like other mental manifestations, may be affected by injury of any part of the encephalon; its loss has been seen to coincide with a state of apparent integrity of every part of the brain, and with lesions of the cerebellum and mesocephalon; and, although some particular portion of the brain may be morbidly affected in these cases, we are far from having attained any precise knowledge on the subject. In very severe cases, the true spinal nerves are so obtunded, that the parts to which they are distributed lose all power; and difficulty of deglutition and relaxation of the sphincters supervene as in other formidable cerebral affections.

When paralysis has once occurred, in the extremities more especially, it may gradually improve, and yet never disappear. At other times, it retains nearly its first intensity. The nutrition of the affected limbs always suffers more or less, and, at times, becomes greatly impaired. When the paralysis disappears wholly, it is probably owing to the entire absorption of the clot, and the restoration of the continuity of nervous matter, so that the nervous action can be propagated through it. It rarely happens that the attack is not preceded by some signs of intellectual disorder; the mental faculties are executed sluggishly; the patient is drowsy,—can scarcely, indeed, keep

awake; or else great restlessness and unusual mental excitement are noticed: the first symptoms, however, more frequently exist than the others. Occasionally, different hallucinations occur, which are not prodromic of encephalic hemorrhage only, but of other serious lesions of the same organs. The author was consulted by a gentleman—who had already experienced one attack of encephalic hemorrhage, and was threatened with another,—who complained, that for months after he had been a visiter of the Military Academy, at West Point, he had been unable to get rid of the sight of the black board, with the demonstrations upon it, which had been used at the examination of the cadets. In other cases, equal hallucinations occur in the organ of hearing; sounds being heard, as of voices calling to the individual, which have no existence except in his imagination. After these hallucinations have existed for some time, unless timely warning has been taken, and often even in spite of every precaution, the patient is attacked with encephalic hemorrhage. In unusual cases, the mental faculties,—at times, even from the first, and, if not, after a short interval,—are executed as well as ever; but generally they suffer more or less, the individual being occasionally rendered utterly imbecile. The degree to which the mental faculties suffer has been supposed to be somewhat dependent upon the extent of encephalic effusion, but dissection does not altogether confirm this; nor does it appear to be owing to the effusion having occurred in one part of the encephalon rather than in another;—great impairment of the mental and moral manifestations having been witnessed, not only when the hemorrhage has been seated in the cerebral hemispheres, but in the cerebellum and mesocephalon. Commonly, however, whenever it implicates the latter body, the coma is profound, and the manifestations in question abolished. Even when the hemorrhage has occurred in the spinal marrow, the intellectual faculties have been found interfered with, and a case is related by M. Fabre, in which the anterior pyramids alone were the seat of a circumscribed hemorrhage, and yet there was a total loss of intelligence, and every symptom was as marked as in the most extensive effusions into the cerebral hemispheres. These facts prove how much we have to learn as to the encephalic seat of the intellectual organs, and how intimately they are associated with each other. The singular facts, indeed, upon record, in which large portions of the cerebral hemispheres have been lost or injured, without the mental manifestations suffering materially, if at all, would seem to show, that the seat of the mind is nearer the base of the brain than has been generally imagined. In other cases, the memory alone is concerned, and it is more or less impaired,—sometimes generally, at others in certain points only. The memory of recent events is entirely lost in one; of noun-substantives in another, and of adjectives in a third; facts of deep interest to the phrenological inquirer, but which are far from having been adequately elucidated by his researches. Cases of paralysis from cerebral hemorrhage afford, indeed, an excellent field for the numerical method applied to phrenology: the indications can be accurately marked before death;—the coincidence or noncoincidence of disease of a certain portion of the cerebral convo-

lutions with the mental impairment can be traced with facility; and a number of such cases, accurately observed, without bias from preconceived notions, would do more to establish the doctrine if true, or overthrow it if false, than all the angry declamations that have been employed, and still are employed, on both sides of the question. This has not been done, and the mind of the cautious investigator must, therefore, still remain in abeyance.

Similar remarks are applicable to the effect upon the genital organs occasionally observed in *cerebellous hemorrhage* or *cerebellous apoplexy* as well as in other affections of the cerebellum. Erection of the penis has occasionally been noticed, and this condition has at times continued after death. It is well known, that Gall places in the cerebellum the seat of the instinct of reproduction; and he, consequently, and his followers, ascribe the effect upon the genital organs to the cerebellous lesion. Cases, in which the coincidence has occurred, have been published by M. Serres, and one was given by the author in the pages of a British medical journal. On the other hand, in unquestioned examples of cerebellous apoplexy, no excitement of the genital organs has been perceptible. Four cases of cerebellous disease carefully observed have been detailed by M. Duplay, in which no particular phenomena were observed connected with the genital organs. "In no case did M. Duplay notice anything like what had been announced by certain observers." It would, indeed, be strange, if serious injury of the cerebellum or of any organ were to produce increased energy of its normal functions; and, moreover, it has been found, that by passing a stylet into the spinal sheath, and by touching and irritating certain parts at a great distance from the cerebellum, erection and even ejaculation were occasioned.

Hitherto, we have considered mainly the effect upon the animal functions, the organs of which are chiefly implicated: still, those of organic life are always more or less affected. The circulation may, indeed, appear to be normal; but commonly it is rendered slower, and the pulse fuller than natural, except where the hemorrhage has persisted for some time, when the circulatory powers may be greatly enfeebled, especially in the paralysed side. Soon after the occurrence of the hemorrhage, the face may be highly injected, and the surface warm; but, at other times, under the shock, the face is pale, and the surface cool; the breathing is usually slow and stertorous, and in cases of the *apoplexie foudroyante*, as it is termed by the French, the patient dies—as it were—in a state of asphyxia.

Dr. J. D. Fisher of Boston,—who has described an *encephalic* or *cephalic bellows' sound*, heard on applying the ear to the occiput or to the top of the head, which he considers to indicate turgescence of the vessels of the encephalon or inflammation compressing the vessels at the base of the brain,—affirms that he has noticed a modification of the normal cephalic sound of the heart in cases of cerebral hemorrhage. In each of six cases, the sound as heard at the surface of the cranium, was decidedly abnormal. Instead of being soft, and appearing as if it proceeded from a distance, as in healthy adults, it seemed to be near the ear, and was characterized by a kind of im-

pulse, as if the whole brain were suddenly raised up against the calvarium. Dr. Fisher asserts, that he has heard it in every case of cerebral apoplexy in which he has practised cerebral auscultation; and he is strongly inclined to believe, that it is a constant symptom of it. He considers it to be caused by the brain, owing to the effusion of blood, being pressed down on the arteries on which it rests, and likewise against every point of its bony case, so that it cannot, for want of room, rise and fall with the pulsations of the arteries at its base, as it does in its natural condition: "and this being the case, the mass of blood thrown from the heart at each contraction of its left ventricle would strike with great force against the compressed parts of the arteries, and communicate a shock to the brain, which would be transmitted to, and be heard as an impulsive sound at the surface of the cranium." The observations of Dr. Fisher have been confirmed by Dr. S. S. Whitney, of Newton, Massachusetts, who, as already remarked, has published some recent observations on cerebral auscultation. The author can say nothing in favour of this sign from his own experience.

Lastly, some singular phenomena have been observed in these encephalic lesions, the explanation of which has been attempted by M. Magendie especially, in accordance with views before referred to, and which have been detailed at greater length in another work. (*Human Physiology*, 6th edit. i. 358, Philada. 1846.) One of these is an irresistible impulsion forwards, so that the individual would cast himself into the fire were it before him, indicating that the corpora striata, the seat of the *backward impulse*—are injured, and that the body is therefore given up to the *forward impulse* seated in the cerebellum. Two such cases occurred to M. Andral. Another is a similar disposition to recoil, which M. Magendie explains by the presumption, that the cerebellum is injured, and the body is consequently given up to the *backward impulse* seated in the corpora striata. Such a case was related to the *Académie Royale de Médecine* by M. Laurent, of Versailles. Still, serious injury occurs to the corpora striata and to the cerebellum without any of these phenomena being observable. Again;—the case of an apoplectic is given by M. Serres, who presented, amongst other symptoms, the singular phenomenon of turning round; and, on dissection, an apoplectic effusion was found in one of the peduncles of the cerebellum, in which M. Magendie places the *lateral impulse*, and by whom similar phenomena were found to be produced on animals when one of the peduncles was divided. These are singular phenomena, and not less inexplicable than singular.

The ultimate result of cerebral hemorrhage is generally fatal: after one attack, the individual is predisposed to a second, which almost always supervenes sooner or later. In rare cases, however, the patient entirely recovers from a first attack, and ultimately dies of some other disease.

**Causes.**—These are the same as in hyperæmia or congestion of the encephalon, and, therefore, do not require enumeration. It would seem, from the registers of Paris, that of 177 cases, 60 occurred in winter; 42 in spring; 40 in autumn; and 35 in summer; and of

10,432 deaths from apoplexy at Milan, the numbers for the respective months of the year were as follows:

January, . . . .	1176	May, . . . .	829
December, . . . .	1075	October, . . . .	822
February, . . . .	1030	September, . . . .	718
November, . . . .	963	July, . . . .	689
March, . . . .	956	June, . . . .	681
April, . . . .	848	August, . . . .	645

Winter consequently appears to be most favourable to it. It is proper, however, to remark, that hemorrhage in the nervous centres is very common in the torrid regions of the globe, and of this the army physicians and surgeons are so well aware, that they caution such as are predisposed to it to avoid the scorching presidencies of British India. Some of the youngest hemiplegics the author has seen were attacked in that climate. (See the author's *Human Health*, p. 28, Philada. 1844.)

Age manifestly affords a predisposition. It has been seen occasionally in new-born infants. Prior to 20 years of age, it is so uncommon, that it is unnoticed by all writers. After 40, owing to the varying evolution of organs, it is much more common. One observer, M. Falret, found the greatest number between 55 and 65 years of age; and of 69 cases, collected by M. Rochoux, the following was the proportion:—

In persons from	Cases.
20 to 30 years old, . . . . .	2
30 to 40, . . . . .	10
40 to 50, . . . . .	7
50 to 60, . . . . .	13
60 to 70, . . . . .	24
70 to 80, . . . . .	12
80 to 90, . . . . .	1
Total, . . . . .	69

From estimates made at Milau, by M. Ferrario, it would seem, that the tendency to apoplexy increases there with age, doubling every ten years, to 80 years of age. The following table of 215 cases of apoplexy and hemiplegia, drawn up by Dr. Geo. Burrows, from his own records, or those of trustworthy persons, gives also the proportion of cases to the population living at each age. It is evidently carefully formed.

Age.	Number of cases.	Population of this age.	Proportion of cases in 1000 persons.
20 to 30 . . . . .	16 . . . .	3,000 . . . .	5.3
30 to 40 . . . . .	30 . . . .	2,500 . . . .	12.0
40 to 50 . . . . .	40 . . . .	1,800 . . . .	22.2
50 to 60 . . . . .	41 . . . .	1,300 . . . .	31.5
60 to 70 . . . . .	54 . . . .	1,000 . . . .	54.0
70 to 80 . . . . .	30 . . . .	500 . . . .	60.0
80 and upwards	4 . . . .	200 . . . .	
	215	10,300	

“It must be remembered,” Dr. Burrows adds,—“that the figures in the second column do not represent the *actual* numbers of cases of apoplexy and hemiplegia occurring at successive ages in any given



population (ex. gr. 20,000), but only the *relative proportion* of cases in each successive decade, and this is compared with the numbers living of the same age. The population is assumed to be 20,000, of whom about one-half will have attained the age of twenty years; and the numbers living in the successive decennial periods will be *nearly* those assigned in the third column of the table.

Sex is likewise a predisposition. M. Falret found, that of 2,297 cases, 1,670 were males, and 627 females. Of 11,731 cases of apoplexy in Milan, 6,492 were of males, and 5,239 of females; and according to the census of Ireland for 1841, the proportion of deaths was 100 males to 56.82 females, or nearly double the number of the former:—from paralysis the proportion was 100 males to 72.22 females. This may be accounted for, by the former being more addicted to modes of living and other circumstances, that may favour the occurrence of hyperæmia of the encephalon. There is reason also to believe, that a particular conformation, derived from progenitors, exerts a powerful influence; yet the numerical method has not been rigorously applied to the determination of this point. Numerous instances are on record, which show that it has occurred as a family disease. The cases of two brothers are mentioned by Dr. P. Frank, who died of encephalic hemorrhage, and whose children—eight in number—subsequently died of the same malady; and in the Collection of the Theses of the Ecole de Médecine for 1830, there is one in which it is stated, that a pupil of the school lost his grandmother, mother, and sister by apoplexy; that one of his brothers had experienced an attack, but had not died; and that a very young sister had been affected with brain fever. These and numerous other cases, which might be cited, show, that there is a predisposition evidently impressed at times on the organism which may require but slight exciting causes to develop it.

Cardiac disease, through its influence on the vascular system, frequently predisposes to apoplexy and paralysis. Dr. Geo. Burrows has given an analysis of 132 cases of apoplexy and sudden hemiplegia, derived from trustworthy sources, and averaged with reference to the co-existence of cardiac disease.

Authors.	Cases.	Diseased heart.	Per Cent.
Andral, - - - -	25	15	60
Clendinning, - - - -	28	15	53.5
Hope, - - - -	39	27	69.9
Burrows, - - - -	34	23	67.6
Guillemin, - - - -	6	4	66.6
Total, - - - -	132	84	63.6

The inference, he remarks, from the foregoing calculation, is, that in any given number of cases of apoplexy and sudden hemiplegia, no less than three-fifths will present unequivocal signs of cardiac disease, either hypertrophy, dilatation, valvular disease, or some combination of these lesions,—a proportion, which—as he observes—proves that the frequency is much greater than is commonly supposed, even by those who admit the occasional influence of cardiac disease in the production of apoplexy and hemiplegia. The relative frequency of the

several cardiac lesions in cases of apoplexy and sudden hemiplegia, may be estimated from the following analysis, by the same observer, of twenty-five cases recorded by M. Andral, and thirty-four taken from his own case books.

	No. of cases.	Heart diseased.	Hypertrophy with valvular disease.	Hypertrophy simple.	Valvular disease.
Andral, - - -	25	15	9	4	2
Burrows, - - -	34	23*	10	6	6
Total, - - -	59	38	19	10	8

**Treatment.**—This may be divided into that which is demanded during the existence of the premonitions, and that which is required when the hemorrhage has actually occurred. The former has been detailed under **HYPERÆMIA OF THE NERVOUS CENTRES**; the latter, consequently, will alone need consideration here.

One of the first therapeutical agents, that will suggest itself, is blood-letting. In all sudden and violent attacks, indeed, it is often had recourse to, before even the practitioner sees the patient, and frequently with unequivocally bad effects. Where hemorrhage has occurred in the nervous centres, bleeding may be suggested to the therapist on good grounds:—in the *first* place, the hemorrhage, as we have seen, is often the result of hyperæmia, which may not be removed by the small quantity that has been extravasated; and consequently there may be a risk of farther effusion. In the *second* place, the blood acts as an extraneous body on the encephalon, and may cause inflammation; and *thirdly*, it is desirable not only to prevent farther effusion, but to endeavour to cause the absorption of that which is already effused. With all those views, bloodletting has been commonly practised in apoplectic seizures. The object must be, to diminish the quantity of blood in the vessels; and it matters not whether it be obtained from the external jugular, the temporal artery, or the veins at the bend of the arm. As to the quantity to be drawn, this must depend upon circumstances. No good, in any case, can be expected from excessive draughts. Although the symptoms may be those of polyæmia, immediately at the onset, it must be borne in mind, that they soon become those of diminished action. It has been properly remarked, that the measure of bloodletting may be very different in mere congestion, and in actual rupture. In the former, the patient exhibits great tolerance of loss of blood; in the latter, the system is extremely and even dangerously susceptible of the loss. Dr. M. Hall recommends, therefore, that the patient should be placed in an upright posture before the blood is allowed to flow; that his countenance and breathing should be watched; that the finger should be kept upon the pulse; and the moment the slightest indication of approaching syncope takes place, the flow of blood should be arrested, and the patient be placed in the recumbent posture. There is no doubt, as a general rule, that if early syncope should supervene, the repetition of general bloodletting would be doubtful policy. Should the patient, on the other hand, bear it well, the operation may have to be

\* In one case there was simple dilatation of the cavities.

repeated again and again; and when the therapist is doubtful as to whether he ought to carry the depletion from the general system much farther, he has, in cupping, a valuable agent, which operates partly as a depletive, and partly as a revellent. The cups may be applied to the nape of the neck, behind the ears, or to the temples; or leeches to the same parts, or around the anus. It is all-important, however, to bear in mind, that the practice of drawing blood profusely, immediately on the occurrence of cerebral hemorrhage, cannot fail at times to be injurious. A shock is often given to the nervous system by the hemorrhage, resembling that which occurs in concussion of the brain, and if blood be taken away immediately, and from both arms, as is often done, the same injurious effects may result as from the like practice in concussion. The practitioner should not be led away by the clamour of bystanders; and if he be in doubt as to the propriety of bloodletting, he should wait until unequivocal symptoms occur to indicate its propriety, or the contrary. (See the author's *General Therapeutics and Mat. Med.* 3d edit. ii., 166, Philad. 1846.)

The impropriety of bloodletting, as a rule of practice in cases of apoplexy, has been lately urged with much force by Mr. Copeman; and, in support of his position, he adduces statistical evidence, which, although confirmatory of his views, cannot be considered to absolutely settle the question, owing to the difficulty of appreciating all the influences in operation in the various cases. It appears, that of 155 cases of apoplexy, in which the treatment is specified, 129 were bled, and 26 were not; of the former, 51 recovered, and 78 died; the recoveries being as 1 to  $1\frac{1}{2}$ , the deaths as 1 to  $1\frac{2}{3}$ . Of the number not bled, 18 recovered, and 8 died—the proportion of recoveries being as 1 to  $1\frac{1}{2}$ ; of deaths as 1 to  $3\frac{1}{4}$ . Abstracting a certain number of these cases, in which the bleeding consisted in the application of a few leeches only, we reduce the figures to 112: of these 38 recovered, and 74 died,—in other words there were two deaths, where bleeding was practised, to one of recovery.

The head must be raised as in other hyperæmic affections of the encephalon, and cold be applied to it; warm sinapised pediluvia being at the same time employed. Much value is to be expected from the use of revellents to the intestinal canal, either from the croton oil, (as directed at page 126,) or from ten or fifteen grains of calomel placed upon the tongue, if the individual be unable to swallow readily; or stimulating turpentine or other injections may be thrown into the rectum. Emetics have likewise been advised as derivatives, but, unless the stomach be loaded, the inconveniences likely to result from the increased impulsion of blood to the head, during the efforts of vomiting, may be productive of mischief. When the patient has gradually sunk into a state of coma, and the case has been esteemed almost hopeless, advantage—it is said—has arisen from mercurial inunction. An instance is given by M. Löwenhardt, in which bloodletting was practised; stimulant enemata were administered, and the usual remedies employed, for twenty-four hours without any improvement in the patient's condition, and in which the subsequent inunction of three ounces

of mercurial ointment producing salivation was followed by amelioration of all the symptoms, and ultimate recovery.

Such are the chief means to be employed in the apoplectic seizure. When it has passed away, and the consequences—the paralysis especially—remain, a different course is necessary. There may be still, for a time, more or less a disposition to hyperæmia, which may be met by cupping on the nape of the neck when it manifests itself, or by other forms of counterirritation. With this view, a seton is often inserted in the nape of the neck.

When the immediate consequences of the hemorrhage have been subdued, and the attention of the practitioner has to be directed to the resulting paralysis, it is important for him to bear in mind, that his confidence has to be greatly reposed in the recuperative powers of the system, and that time, therefore, is a necessary element in the treatment. It is customary to apply excitant agents to the paralyzed parts, but these are rarely productive of much benefit; various excitants, too, have been administered internally, but they obviously cannot exert any beneficial agency on the pathological condition of the encephalon, whilst they are apt to hurry on the organic actions; and, by exciting hyperæmia in the encephalic vessels, may give occasion to farther effusion. Of all the various liniments that have been employed, there is none better than the use of the flesh-brush, yet its agency,—for the reasons assigned,—can be but limited, and whilst it or any other excitant is had recourse to, time is passing and the encephalic mischief is becoming diminished: for like reasons, electricity, applied in any form to the paralyzed limbs, has not been found to be possessed of much beneficial agency.

Electricity and galvanism, acupuncture and electropuncture, ointments of delphinia, veratria,<sup>a</sup> and the counterirritant lotions of Granville,<sup>b</sup> have been used, and, at times, with apparent advantage; but the same remarks are applicable to all these excitants, that have been made on those already mentioned.

<sup>a</sup> R.—Delphinia, seu  
Veratria, gr. x.—xxx.  
Adipis ʒj. Misce intimè.

The size of a hazelnut to be rubbed in, morning and evening, for from 5 to 15 minutes.

<sup>b</sup> R.—Liq. ammon. fortiss. fʒj.  
Sp. rorisamarin. fʒvj.  
— camphor. fʒij.—M.

A piece of flannel to be impregnated with the lotion, and applied to a small portion of the paralyzed surface, for a minute or two.

Internally, the flowers and root of arnica montana are much employed in Germany; and especially the *oleum athereum florum arnicæ*. Schneider recommends it in old cases of paralysis, that are the result of the apoplectic condition.

R.—Ol. æther. florum arnicæ gtt. iv.  
Sp. ætheris sulphuric. comp., seu  
— ætheris nitrici, fʒss.—M.

Dose, four to twelve drops, four times a day.

He often administered it with marked success,—the paralytic limbs becoming warmer, more active, and more serviceable under its use. (*New Remedies*, 6th edit., p. 90: Philad. 1846.)

Brucia has also been given in paralysis with varying success; but

it would seem to have acted most beneficially in paralysis resulting from lead poisoning.

R.—Bruciæ gr. xij.  
 Confect. rosæ seu  
 Micæ panis ʒss.—Misce et divide in pilulas xxiv.  
 Dose, one pill, twice a day.

The alcoholic extract of *nux vomica* has, in recent times, been more frequently administered as an excitant to the nervous system, than any other agent, perhaps, of the kind. It has been highly extolled by numerous distinguished observers. The author's experience with it has not been limited, but although he has succeeded in inducing tetanic movements in the affected limb, he has not been satisfied, that much advantage has been derived from it.

R.—Extract. nucis vomicæ alcoholic. gr. xij.  
 — glycyrrhiz. seu  
 Confect. rosæ gr. xxiv.—Misce intimè et divide in pilulas xij.  
 Dose, 1 or 2, increasing the dose gradually until tetanic effects are induced.

The same may be said of the active principle of the *nux vomica*—strychnia,<sup>a</sup>—but, from the observations of different practitioners, it would seem, that its efficacy is greatest in paraplegia; less so in hemiplegia, although it appears to have been given with advantage in the latter affection; but its administration in hemiplegia requires special circumspection, particularly when the paralysis has succeeded to apoplexy, and where there is constant danger of the recurrence of the hyperæmia, which was probably its precursor.

<sup>a</sup> R.—Strychniæ gr. ij.  
 Confect. rosæ gr. xxiv.—Misce et divide in pilulas xxiv.  
 Dose, one, night and morning, gradually increasing the number.

Or,

R.—Strychniæ gr. iij.  
 Alcohol, fʒj.—M.  
 Dose, six to twenty-four drops, twice or thrice a day.

In high grades of paraplegia, the internal use of the remedy is to be preferred; but, in general, the endermic administration is more satisfactory. In paralysis of the limbs, a spot is generally selected in the vicinity of the spinal marrow.

M. Payan thinks, that experiment has shown ergot to be primarily and essentially an excitant of the spinal marrow; and he conceives, that its agency on the uterus, bladder, and lower extremities is but secondary, from a reflex action transmitted from the spinal marrow to those organs through the nerves distributed to them. He has given the details of some cases of paraplegia, which seemed to be relieved by it;—an infusion of fifteen grains in water being given at first in the course of the day, and the dose being gradually augmented.

Should the powers of the system seem to fail, they must be supported by a more liberal diet, and by the use of tonics which are devoid of stimulating properties: perhaps there is no better than the cold infusion of cinchona; or the infusion of gentian or of colomba of the Pharmacopœias, given in the dose of a fluidounce and a half, three or four times a day. With a view of preventing a recurrence of the hemorrhage,

care should be enjoined in the use of appropriate diet, which should be moderately nutritious, but not excitant. The patient should take exercise in the open air as much as practicable; should avoid tight clothing, especially about the neck, which might compress the vessels, and impede the return of blood from the head; and should keep the head cool and the feet warm. In bed, the head should be moderately raised, and the air of the chamber kept cool and pure. Attention should, likewise, be paid to the alimentary canal, which is apt to be torpid in those affections, and to require the frequent use of *lavemens*.

#### V. HYPERTROPHY AND ATROPHY OF THE NERVOUS CENTRES.

SYNON. *Fr.* Hypertrophie et Atrophie des Centres Nerveux.

*Hypertrophy of the brain*, *Fr.* *Hypertrophie cérébrale*, *Hyperencéphalotrophie*, (Piorry,) *Ger.* *Hypertrophie des Gehirns*,—has not been long known, and is by no means common. Dr. Copland has only met with it three times in several thousand cases. It is alluded to by Morgagni; and within the present century has attracted the attention of many observers;—of MM. Laënnec, Jadelot and Guersant, Scoutetten, Dance, Mériadez Laënnec, Rilliet and Barthez, Andral and Calmeil, for example. Its pathological characters are;—approximation of the convolutions, so that the anfractuosités are almost destroyed, and the brain exhibits a smooth surface: the ventricles, too, are effaced or nearly so, and the membranes of the nervous centres seem distended almost to bursting. In the encephalon, it has only been seen in the cerebral hemispheres, and, in these cases, if the bones of the cranium be not formed on a larger outline, they press upon the brain, so as to disorder its functions; the patient becomes dull, almost idiotic, and suffers greatly from deprivation of the senses of vision and audition, and from headache. Epilepsy and convulsions have, also, been produced by it. It does not appear to affect the cerebellum, which is singular, seeing that this portion of the nervous centres is actively employed from an early period of existence.

It is scarcely necessary to say, that we have no means of diagnosing, positively, this pathological condition; and, if we had, it would be difficult to suggest an adequate remedy. M. Grisolle, indeed, thinks there is reason to fear that it is always fatal. The symptoms have, consequently, to be met as they arise, and to be treated upon general principles.

*Hypertrophy of the spinal marrow* is not less obscure; but, fortunately, it is extremely unfrequent.

*Atrophy of the nervous centres* is met with at times. We see the cerebral substance become absorbed in encephalic hemorrhage—constituting the *Anencéphalotrophie*, of Piorry;—and there are cases in which the atrophy is sufficient to induce helpless dementia. Such, at least, is the observation of Dr. M. Hall.

#### VI. SOFTENING OF THE NERVOUS CENTRES.

SYNON. *Fr.* Ramollissement des Centres Nerveux.

This pathological state has only been described in modern times;

and although supposed by some to be the consequence of inflammation of the nervous substance;—a view, which has been strongly maintained by MM. Lallemand and Durand-Fardel, it would not appear to be always so. It certainly remains to be proved, as M. Calmeil has remarked, that white softening with anæmia, and without purulent infiltration, has been really preceded by active hyperæmia of the softened tissue. Moreover, the fact, that *ramollissement*, whatever may be its duration, never occasions suppuration, although in the brain pus forms rapidly, is strongly against the idea of its inflammatory nature. Many pathologists describe it, from the supposed cause, under the head of *Cerebritis*, and some under that of *Encephalitis*. One observer, M. Cruveilhier, under similar views, denominates it *Capillary apoplexy*, (*Apoplexie capillaire*.) Another, M. Rostan, who saw it chiefly in the aged, considers it to be analogous to the gangrene of old people; whilst others—as Messrs. Abercrombie and Robt. Law—think, that it is analogous to gangrene in other parts of the body, and, like gangrene, may arise from two very different causes—from inflammation, and from failure of the circulation from disease of the arteries:—the latter, they conceive to be the source of the appearances described by M. Rostan. It is clearly an altered state of nutrition of the organ, occurring under the influence of morbid causes of very different character. To endeavour, says M. Andral, to discover these various conditions is the great but difficult object—an object of far more importance than that on which observers have exhausted themselves in recent times, when they have been desirous of referring every cerebral softening to some form or degree of inflammation of the nervous centres.

To softening of the brain, the terms *Malacosis cerebri*, *Encephalomalacia*, *Cerebromalacia*, *Encephalosepsis*; Fr. *Ramollissement du cerveau*, *Encéphalomalaxie* (Piorry); Ger. *Gehirnerweichung*, *Zerfliessung des Gehirns*, *Ataktische Entartung des Gehirns*—have been assigned. The disease may be acute, or chronic.

**Diagnosis.**—The chief symptom, that characterizes softening of the nervous centres, is a fixed local pain, which does not yield to the ordinary therapeutical agents;—the pain being frequently unaccompanied by any excitement of the circulation. Where the cerebral hemispheres are softened, the intellect is more or less blunted; and sensation and motion are not accomplished as in health: generally, both are impaired; but, at times, sensation is augmented, whilst motion, perhaps, on the opposite side to the affected hemisphere, is impracticable. Paralysis is, indeed, a common attendant on softening, especially where the corpora striata and the parts in their vicinity are concerned. In 32 cases of acute softening, recorded by M. Durand-Fardel, paralysis was present in 23 cases. In two cases it was general: in one, there was simply weakened power of motion: in six, the paralysis was limited to the arm, and in 14 it affected one entire side. At other times, instead of the limbs being paralyzed, they are more or less rigid and contracted. Still, according to M. Calmeil, the most precious symptom in the diagnosis of local softening of the brain is paralysis seated in the side of the body opposite to the

softened hemisphere. "Without being invariably present, the abolition or quasi-abolition of motion is so rarely absent, that whenever the premonitory symptoms of softening are noticed, we should hasten to explore the movements of the limbs."

In both its acute and chronic form *ramollissement* may be confounded with several other diseases, as with cerebritis, meningitis, hyperæmia, cerebral and meningeal hemorrhage, and morbid formations in the encephalon, especially the last.

It has been affirmed, that the corpora striata and thalami nervorum opticorum are the parts which are most frequently the seat of the softening. In cases, however, of the simple uncomplicated disease, some part of one or other of the hemispheres is most commonly affected; and of these, according to MM. Rostan and Fuchs, the right suffers more frequently than the left, in the ratio of two to one.

M. Durand-Fardel found acute softening by far most frequently in the convolutions. Of 33 cases, 31 were examples of this seat of the disease; and, in 9 the convolutions were alone affected. Fifty-three cases, collected from various sources, gave the following results as regards the seat of the lesion:

Convolutions and medullary substance,	-	-	-	22
Convolutions alone,	-	-	-	6
Medullary substance alone,	-	-	-	5
Corpus striatum and thalamus opticus,	-	-	-	6
Corpus striatum alone,	-	-	-	11
Thalamus opticus alone,	-	-	-	4
Pons Varolii,	-	-	-	3
Crus cerebri,	-	-	-	1
Corpus callosum,	-	-	-	1
Walls of the ventricles, septum,	-	-	-	1
Fornix,	-	-	-	1
Cerebellum,	-	-	-	1

The appearances presented by the neurine in acute softening, are redness, which is more marked in the gray than in the white substance; and a yellow or dull white tint afterwards, which is owing to the altered hue of blood infiltrated into the softened substance, or to an absence of all vascularity. M. Lallemand attributes it to purulent infiltration of the neurine; and M. Gluge thinks he has proved the presence of purulent corpuscles in some cases of white softening; but M. Durand-Fardel asserts, that the sound cerebral substance, when viewed through the microscope, exhibits corpuscles exactly like pus corpuscles.

The neurine, in cases of *ramollissement*, is at times broken down into a pulpy, diffuent substance; at others, true cavities exist, owing to the absorption of the softened matter; hence we can understand why the phenomena may resemble those of hemorrhage into the nervous centres.

Chronic softening appears to affect the convolutions, corpora striata and optic thalami in the same proportion as the acute.

Cases are on record—and the author has himself met with such—where the intellect was unaffected, although the softening was great. One of the most interesting examples of the kind was communicated in a letter to him, by Dr. Boerstler, of Lancaster, Ohio. In this case,



the place of the skull, previously occupied by the right anterior and middle lobes of the cerebrum, presented a perfect cavity, which was filled with some sero-purulent matter, and the left hemisphere was in a state of *ramollissement* down to the corpus callosum. It was so much softened, that the slightest touch would remove portions; yet, in his daily visits to the subject of this case, Dr. Boerstler could not discover any derangement of the intellectual faculties; dulness of sensibility, obtuseness of perception, impairment of judgment, or want of memory. Such cases can, however, only be regarded as anomalies.

The following case, which fell under the author's charge, is a good example of *ramollissement* and its consequences, supervening evidently on inflammation. A man, aged 21, after much exposure to the sun, was attacked with vomiting and intense pain in the head, on the 15th of July, 1839; for this his head was shaved, and cups, leeches, and blisters were applied to the nape of the neck; blisters also were applied to the lower extremities, but he grew gradually worse, and, on the third day of August, was deprived of speech. Rigidity of the right arm and leg was also noticed, which continued to grow worse until the 9th, when the author saw him. He was then much emaciated; right side completely paralyzed; extremities very rigid; face distorted; mouth drawn to the left side; pupils dilated; respiration laboured; and he took no notice of anything. He went on slightly improving until the 23d instant, when, after an attack of faintness, he was found comatose, with complete loss of sensation, motion, and intelligence, from which he could not be aroused. He died on the 25th of August. On dissection, the meninges of the brain were found unusually injected, with evidences of previous inflammatory action; the substance of the corpus striatum of the left side, in its upper portion, to the extent of about one-fourth of an inch, was reduced to a greenish-yellow pulpy mass; portions of it were in the state of a yellowish pus, and the medullary matter of the brain, on that side, as far up as the base of the convolutions, was softened to the extent of two and a half inches in the antero-posterior direction, and two inches in the transverse, extending more particularly to the anterior part of the brain: about a gill of fluid was found between the membranes and the brain, immediately anterior to the medulla oblongata. Where the softening is seated in the mesocephalon, or in the medulla spinalis,—Fr. *Ramollissement de la Moëlle épinière*,—the intellect may be unimpaired, but the functions of sensation and motion of the parts, that receive nerves from the softened medulla, or the portions of the medulla below the seat of the softening, are always—or almost always—more or less affected.

The following table, being an epitome of published cases, exhibits the results of the observations of M. Prus, who, from his situation as physician to the large establishment of La Saltpétrière, in Paris, had ample opportunities for investigating the diseases of the nervous centres.

*Pathological appearances.*

1. Gelatiniform softening of the two inferior thirds of the spinal marrow.
2. Superficial softening of the whole circumference of the medulla oblongata.
3. Slight softening of the posterior columns of the spinal marrow in the portion constituting the lumbar swelling.
4. Softening of the spinal marrow in the cervical and lumbar portions; the gray matter of the cord invisible in the diseased parts, and almost so in others.
5. Reddish softening in the middle lobe of the right hemisphere, and in the anterior lobe of the left hemisphere; spinal marrow perfectly healthy.

*Functional phenomena.*

- Contraction of the extensors and flexors of both lower extremities; sensibility persisting, but modified; progressive paralysis of the sphincters of the rectum and bladder.
- Sudden loss of speech; deviation of the mouth to the right side; progressive diminution in the voluntary power of the left arm; incomplete paralysis of the left side of the face, without any change in the sensibility; involuntary discharge of saliva; great dyspnœa.
- Pricking and loss of all sensibility of all the limbs, especially of the lower, and incontinence of urine.
- Progressive paralysis of motion only in all the limbs; paralysis of the sphincters of the rectum and bladder; spasmodic respiration.
- Paralysis of motion only in all the limbs, which are slightly contracted; progressive paralysis of the sphincters of the rectum and bladder.

**Treatment.**—As there appears to be no mode by which ramollissement of the nervous centres can be accurately diagnosticated, the affection has to be treated upon general principles.

## VII. INDURATION OF THE NERVOUS CENTRES.

SYNON. *Fr.* Induration des Centres Nerveux.

This condition may likewise be the consequence of inflammation. When it is present, the symptoms, although by no means pathognomonic, resemble those induced by accidental productions; and, accordingly, epilepsy is by no means an uncommon evidence of it. Induration is, however, far less frequent than softening. The intellect may be affected or not by it, when it is seated in the cerebrum or cerebellum, or paralysis may be the consequence; and should this gradually increase, it has been regarded as indicative of induration of the spinal marrow.

**Treatment.**—As induration of the great nervous centres may be present along with hyperæmia, as well as anæmia of the brain, and may be accompanied or not by evidences of concomitant inflammation, it is impossible to lay down any general method of management. Like softening of the same parts, it will have to be met on general principles; and after all, dissection may alone establish that it has been present.

## VIII. ACCUMULATION OF SEROUS FLUID IN THE NERVOUS CENTRES.

The nervous centres—being enveloped by a serous membrane, which passes into the cavities, and, like other serous membranes, is the seat of a watery secretion—are liable to œdema, or to dropsy from the accumulation of such secretion. This accumulation may be owing to simple loss of balance between those vessels whose office it is to take up, and those which deposit the secretion; and the problem, with the pathological inquirer—as in other similar cases—is to decide upon the precise condition that destroys the balance.

Effusion is known to be one of the terminations of inflammation, and hence we have hydrocephalus as one of the consequences of encephalitis: properly, indeed,—as has been shown,—the hydrocephalus acutus of writers is but a form of encephalitis. At other times, effusion takes place, owing to hyperæmia of the vessels, no matter how produced,—transudation occurring through the coats of the over-distended vessels; and this is probably the mode in which *Serous Apoplexy*—*Apoplexia serosa*, *A. pituitosa*, *Hydrocephalus acutus senum*, *Encephalochysis senilis*; Fr. *Apoplexie séreuse*, *Hydropisie cérébrale suraiguë*, *Hydrorrhagie*, *Hydro-encéphalorrhée* (Piorry); Ger. *Seröser Schlagfluss*, *Gehirnwasserguss der Greise*, *Seröse Apoplexie*, *Wasserschlag der Greise*,—occurs;—all the signs of hemorrhage presenting themselves, and the patient sinking, whilst dissection exhibits only an unusual amount of serum in the ventricles. It can be readily understood, too, that this condition may be co-existent with softening of the brain, as hemorrhage is known to be; and that hemorrhage and effusion of serous fluid may be present together. Occasionally, it would seem, that an infiltration of serous fluid takes place into the cerebral pulp, so that it appears more moistened or watery than common; and, when sliced or pressed, small drops of water are seen to ooze out. This œdema—*Œdema cerebri*; Fr. *Œdème du cerveau*,—may exist along with accumulation of fluid in the arachnoid, in the ventricles, or at the base of the brain. The acute form of the affection—as might be conceived—is characterized by symptoms like those of cerebral hemorrhage owing to pressure:—the chronic stage is said to have been met with more especially in persons of advanced age, in whom sensation, motion, and intelligence have given way, without our being able to refer the impairment to the influence of age. The stupidity of the insane has, likewise, been attributed to chronic œdema of the brain.

It would appear, that during life, and in health, the ventricles of the brain contain a quantity of serous fluid; that this quantity decreases in proportion to the interval between death and the examination of the body; and that the fluid disappears owing to the hygrometric properties of the brain, and is found in the cerebral substance. Experiment, indeed, shows, that the brain is markedly hygrometric: if a piece of the cerebral substance of a dog just killed be plunged into water or serum, it will absorb its own weight of those fluids. These facts make it important to take into consideration—in our examinations of the brain—not only the quantity of the fluid found in the ventricles, in the cavity of the arachnoid, &c., but likewise that contained in the substance of the brain itself. When the cephalo-spinal fluid, which naturally exists in the spinal sheath, accumulates in the spine, we have the affection commonly known under the name *Hydrorrhachis*, *Hydrorrhachitis*, *Hydrops Spinæ dorsæ*, *Myelochysis*; Ger. *Hydrops der Rückenmarkshöhle*, *Rückenmarkswassersucht*. The ordinary quantity of the fluid in health has been estimated by M. Magendie at two ounces, but it often amounts to five, and if this be augmented from any cause, serious inconvenience may arise from the compression; yet a certain degree of compression by it is necessary, in order that the medulla shall execute its functions normally, and if the pressure be sud-

denly withdrawn, inconvenience—as fatal syncope—it has been imagined, might be the result. Generally, in infants, in whom the fluid in the spinal sheath increases in quantity, the spinous processes are cleft, or there is *spina bifida*, so that the membranes protrude, and the compression is diminished.

We have remarked, that acute hypercrinia of the encephalon is often the consequence of inflammation, or of hyperæmia; the symptoms, consequently, are so imprecise, that we cannot pronounce positively as to the cause of the compression, but the accumulations of fluid, which occur in a more chronic manner, generally exhibit their existence by unequivocal symptoms in the bony coverings,—the serous fluid, if contained within the cranium, distending the bony parietes, preventing the obliteration of the fontanelles, and causing the head to acquire, at times, enormous dimensions, so as to constitute *Hydrocephalus chronicus*, *Hydrops capitis seu cerebri*; Fr. *Hydrocéphale chronique*, *Hydrocéphaloectasie*, of Piorry; Ger. *Chronische Wasserkopf*, *Chronische Kopfwassersucht*, *Chronische Gehirnwassersucht*. When the cerebral development is examined in these cases, it presents singular appearances. According to MM. Gall and Spurzheim, all the parts exist, but they are simply deployed by the fluid. At times, however, the brain has been found in an entirely rudimentary state;—thus exhibiting the inaccuracy of a fundamental proposition of those writers,—that where there are no nervous centres, there can be no cranial development. It has been proved, that in many cases, water alone may be found when the bony cavities are regularly formed.

The quantity of fluid in these cases is various. It has been found, according to M. Grisolle, to amount to 10, 12 and 25 pints; and it would seem, that J. Frank examined a cranium in Cruikshank's museum, which could contain thirty-two pounds of fluid.

**Treatment.**—The treatment in the acute forms of serous infiltration into the nervous centres must be the same as that recommended in encephalitis, which has terminated in signs of compression.

Where children, or young individuals, are attacked with coma, without any vascular excitement,—the skin, on the contrary, being cool, and the surface pale—serous effusion may be suspected, directly or indirectly induced by nervous exhaustion or inaction; in such case, general bloodletting cannot be indicated; revellents have to be trusted to, and the whole of the treatment advised at page 151.

In cases of chronic accumulation of fluid in the nervous centres, the object is, if practicable, to remove the fluid, and prevent its reaccumulation. Compression—methodical compression—has been applied to endeavour to promote the absorption of the fluid, and occasionally with success: at others, both in *hydrocephalus chronicus* and in *hydrorrachis*, the fluid has been cautiously evacuated, and cases are on record in which even the sudden evacuation of the fluid in the latter disease has not been productive of as much deleterious influence on the function of innervation as had been anticipated. The operation, practised by Dr. Conquest, who appears to have been very successful, consists in passing a small and delicately constructed trocar into one of the lateral ventricles, and drawing off as much fluid as the

powers of the constitution will admit of. The most eligible spot, at which the trocar can be introduced, he considers, is in the course of the coronal suture, about midway between the crista galli of the ethmoid bone and the anterior fontanel; so that the danger of wounding the corpus striatum is avoided on the one hand, and the longitudinal sinus, on the other. The instrument usually penetrates\* about two inches, and, in most cases, the serum is colourless, but occasionally tinged with blood. At times, on withdrawing the trocar, the water will not flow until a probe has been passed through the canula, to remove portions of the cerebrum that block it up. After the fluid is withdrawn, methodical compression may be employed over the whole head in cases of hydrocephalus; and by means of compresses, cautiously used, in hydrorrhachis or spina bifida. Dr. Charles West has inquired into the results of puncture of the head in 56 cases of chronic hydrocephalus, from which he infers, that the instances, in which life was prolonged by the operation, appear to be very few, and the cases in which any reasonable prospect of the patient's recovery existed after a week had elapsed from the first performance of the puncture, still fewer. Sometimes, the puncture was followed by an almost immediate aggravation of the encephalic symptoms, and by death. Usually, however, a degree of apparent improvement followed the puncture, but the fluid soon collected again, and the second operation was succeeded by less marked relief. The quantity of fluid increased, and whilst the size of the head continued undiminished, or even grew larger, the body became emaciated; and death either took place from exhaustion, or cerebral symptoms came on, and life was terminated by coma or convulsions. In many cases, dissection exhibited serious organic disease or malformation of the brain, although no symptom during life betrayed its existence.

#### IX. PUS IN THE NERVOUS CENTRES.

The secretion of pus into the nervous centres is a consequence of inflammation. It is met with at times diffused in the nervous substance, and at others encysted, forming an abscess.

Encephalitis ending in the secretion of pus is sometimes induced by the irritation from caries of the petrosal bone extending to the meninges or substance of the encephalon, giving rise to the affection called *cerebral otorrhœa*,—or otorrhœa complicated with, and causing, inflammation and suppuration in the meninges and the brain. Suppuration of the brain is not an unfrequent consequence of wounds, and reference has already been made to such cases, in which the brain exhibited a broken-down and purulent condition. As in other internal organs, too, metastatic suppuration may be induced in the encephalon.

The symptoms of suppuration of the nervous centres must necessarily be equivocal. The indications of previous inflammation may exist, and the individual may die, without any decisive evidence that the inflammation had terminated in suppuration: the fact may only be revealed by dissection. Hectic fever, according to M. Fuchs, is sufficient to distinguish suppuration of the brain—*Encephalophthisis*, *Encephalopyosis*, *Helcosis* seu *Abscessus* seu *Apostema cerebri*; Ger.

*Gehirnschwärsucht, Gehirnvereiterung, Eiterung des Gehirns.* In certain cases, the patient has retained all his intellectual powers until the last, when extensive suppuration has been found in the cerebrum; and the same has been remarked when the abscess has been seated in the cerebellum. In other cases, headache in the occipital region, or paroxysms of cephalalgia, have been the only or the main symptoms.

#### X. MORBID FORMATIONS IN THE NERVOUS CENTRES.

##### a. *Cellular, adipous, fibrous, cartilaginous, and osseous formations in the nervous centres.*

In the tissues of various parts of the economy, transformations may occur into *analogous tissues*, or such as exist elsewhere; or into *heterologous* or *heteroclite tissues*, or such as have nothing similar to them in the healthy economy. In both cases, the nutritive vessels have their action changed, and depraved; but in the latter, the deviation and depravation are more complete. The mode in which cellular transformations occur in the nervous centres is generally the following: owing to an effusion of blood or pus into some part of the nervous substance, a cellular or serous membrane is formed, from which a serous fluid is secreted, that softens the effused substance and facilitates its absorption: when this is taken up, the sides of the membrane may come together, and a cicatrix be thus established; or, if any rupture or laceration occur in the nervous substance, the tissue becomes softened, and, in order that union may take place, it passes to a less advanced state of organization or to the state of cellular tissue, and this may become the nucleus for adipous, fibrous, cartilaginous, or osseous productions. At other times, however, osseous deposits are found, which do not admit of this explanation, and which afford no clue to the cause of the transformation. In the case of a young female, referred to by M. Andral, who died at the Hôpital des Enfants, half a dozen small, irregularly shaped concretions, like splinters, were found occupying the centre of one of the lateral lobes of the brain. No particular symptom indicated their existence during life.

As there are no phenomena that demonstrate the presence of these transformations, except what equally announce the presence of other tumours in the nervous centres, nothing need be said of the treatment adapted for them.

##### b. *Tubercular, scirrhus, and encephaloid transformations.*

###### 1. *Tubercles.*

Tubercles of the brain—*Encephalophymata, Phymatosis* seu *Strumosis* seu *Tubercula cerebri*, Fr. *Tubercules du cerveau*, Ger. *Gehirntuberkeln, Knoten des Gehirns*, are met with more frequently in children than in adults; and they occur both in the cortical and the medullary substance: they may affect, too, the meninges of the brain as they do other serous membranes, and, in such case, may compress the nervous substance. Their size varies from that of a millet seed to that of a pea or an egg, and they are, at times—some say always—enveloped in a cyst, especially when they proceed to softening. Cases have occurred, in which a whole lobe of the brain has been transformed

into a tubercular mass; at times, too, but one tubercle has been found; and, on the other hand, a case is on record, according to M. Andral, in which there were two hundred in the gray substance.

The presence of tubercles is, at times, productive of no change in the surrounding nervous substance; but, at others, inflammation and its consequences are excited. When seated in, or near, the meninges, these have been found injected, thickened, and adherent either to each other or to the nervous substance; and, at other times, copious effusion of a serous fluid is met with. Hydrocephalus acutus—as elsewhere remarked—has been presumed to arise from the presence of tubercles, and when children have died of tubercular disease, these formations have been found in the brain, and their presence has been indicated by symptoms of meningitis,—in this case, *tubercular meningitis*.

As to the causes of these tubercles, which are most frequently seen in children from one to five, and from ten to twelve years of age;—they are evidently dependent upon a perversion of the function of nutrition of a peculiar nature. There must, indeed, be here, as in all cases, a peculiar diathesis, which is often derived from progenitors, but is, doubtless, frequently acquired.

The symptoms of tubercles in the nervous centres are not decisive. They are such as are induced by chronic inflammation and its results: as, however, the coincidence of tubercles of the lungs with tubercles elsewhere is so general, almost universal,—if a child complain of headache singly or combined with disorder in the movements, and if, on examining the chest, there be physical signs of tuberculosis, the evidence will be very strong, that the same condition exists in the encephalon. It is a curious fact, however, that tubercles of the brain would appear to be present frequently without occasioning any disturbance of the cerebral functions, and only be discovered after death. They may even attain a very considerable size, without giving rise to irritation or inflammation of the surrounding neurine. In almost all cases of encephalic tubercles, the progress of the disease is slow, with occasional acute attacks as of delirium or convulsions: but, sooner or later, signs of encephalitis occur, under which the patient sinks.

Tubercles in the spinal marrow—*Myelophymata*, *Tubercula medullæ spinalis*; Fr. *Tubercules de la moëlle épinière*; Ger. *Rückenmarkstuberkeln*—may be indicated by impairment of sensation and motion, but, it need scarcely be said, such impairment is not pathognomonic.

## 2. Scirrhus and encephaloid productions.

These formations are by no means so common as tubercles, nor can their existence be more than suspected during life. Their size of course varies: at times they are not larger than a nut; whilst, at others, they occupy a considerable space in the encephalon. The symptoms, produced by them, are equivocal, and cannot be diagnosed from those caused by tubercles or chronic affections of the encephalon in general. As in the case of other tumours,—being slowly formed, they may exist without giving rise to any symptoms;

or they may occasion paralysis, or convulsions, or inflammation of the brain or its membranes.

From an examination of the recorded cases of numerous observers, Dr. Albers has deduced the frequency of tumours in different parts of the brain to be as follows:—

In the circumference of the brain,	52
In the gray substance of the hemispheres,	53
In the medullary substance of do.	34
In the corpus striatum,	2
In the thalami nervorum opticorum,	9
In the corpora quadrigemina,	1
In the right lateral ventricle,	12
In the left do.	3
In the gray substance of the cerebellum,	22
In the medullary substance of do.	22
In the corpus callosum,	2
In the medulla oblongata,	4
In the pons Varolii,	11
In the tuber annulare,	10

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It would appear, consequently, that the greater hemispheres, the circumference of the brain, and, after these, the cerebellum, are the most common situations for tumours.

### 3. *Calculi.*

Calculous concretions have been found in the nervous centres,—the greater part in the hemispheres of the brain, and only in one case in the cerebellum. The symptoms, induced by them, have been so various as not to be adequate to any satisfactory diagnosis.

## XI. ENTOZOA IN THE NERVOUS CENTRES.

It has been before remarked, that cysts are met with in the nervous centres, which, at times, contain a considerable quantity of fluid, as much as sixteen ounces. According to some, these, as well as most tumours developed in different parts of the body, are of hydatid origin. True hydatids have, however, been found in the brain. A case has been published of this kind, in which the hydatid was lodged in a cyst. It resembled a small vesicle full of liquid, terminated by a kind of cylindrical neck, was alive, [!] and capable of elongating and contracting itself. Two other free *cysticerci* escaped from a neighbouring portion of the cerebral substance. These are the only entozoa seen in the nervous centres of man.

The same remarks as to *symptoms* and *treatment* that were made on other morbid productions apply equally here. It is impossible to foretell their presence during life, and therefore no special medication can be adapted to them.

The following cases sufficiently exhibit the obscurity that must exist, until the precise nature of the affection is revealed by dissection. Two of them have been reported as occurring in the practice of M. Martin Solon. The symptoms, in the *first*, in a man 53 years of age, resembled those of effusion of blood into the right hemisphere of the brain followed by hemiplegia. The dura mater was very vascular, with slight serous effusion into the cavity of the arach-



noid, and injection of the pia mater. Opaline vesicles were found in both hemispheres, but mostly in the anterior lobe of the left, of the size of large peas, and containing a transparent fluid, the centre of which was occupied by a small, globular, opaque, milky-white body, without head or tail, visible by the microscope. The *second* case was in an epileptic patient, aged 23, in whom the acephalocysts were found in smaller numbers.

The following case of chronic meningitis, complicated with softening of the brain and hydatids, fell under the author's care, and was reported by one of the then resident physicians to the Philadelphia Hospital, Dr. Vedder, now of Schenectady. A married woman, aged 47, was admitted into the lunatic asylum, on the 18th of September, 1839. No anterior history could be obtained. The expression of her countenance was unfixed; face not flushed; pupil of the left eye much smaller than that of the right. She talked very little, and in a low tone; and there was manifest delirium; but no vascular excitement. She remained nearly in this condition, until the 27th; the pulse, however, becoming smaller and more frequent,—96. The only evidence of encephalic lesion was the want of correspondence between the pupils, the unfixed expression, and the mental aberration: there was no constipation, and no vomiting. She seldom slept more than six hours, and usually only two or three. At one time, she imagined that people were calling her; at another, that serpents were in her bed, on which account she positively refused to sleep in it, preferring to lie under it, which she not unfrequently did. The treatment, until the 27th, consisted of moderate purging, revulsion to the nape of the neck, and hypnotics. The case, at this time, would, doubtless, have been pronounced one of insanity, but for the appearance of the pupils: at one time, indeed, it was imagined that this might be accidental. Her condition on the 29th was as follows:—expression rather dull; pupils more contracted and unequal; head cool; no delusion; appetite slight; pulse 86, small and quick. At the visit, she was found lying under the bed; insisting that her husband was dead; had slept none for the previous two nights, although the hypnotic was given as usual. (A blister was applied to the nape of the neck.) No important change took place, until the 10th of October. It may be worthy of notice, however, that she imagined herself made of glass, and was in the greatest dread of being touched, crying out—when she was approached,—“You will break me!” On the night of the 10th of October, she became more delirious and noisy: saw murderers armed with knives. On the 8th, she complained of pain in the abdomen, which was the first time she had experienced pain since her admission into the hospital. Slept less; illusions of seeing and hearing; answered correctly; lay on the back with the lower extremities drawn up; eyes dull; pupils equal and dilated; knitted her brows; tongue red and shining; pulse 102, small; skin harsh and dry; speech thick; hearing acute; rigidity of both arms equal; whole body very rigid. The blister was dressed with the *unguentum hydragryri*, and the following powder was ordered:

R.—Hydrarg. chlorid. mit. gr. ij.  
Morphiæ sulphat. gr.  $\frac{1}{8}$ .—M.  
To be given every third hour.

R.—Fol. sennæ,  
Magnes. sulphat. aa ʒj.  
Infunde in aquæ bullient. Oj.  
To be administered as an enema.

On the 12th, the cerebral expression was more marked; pupils contracted; muttering delirium; speech more thick and unintelligible. The rigidity had increased; no distortion; no evacuation for the three days preceding; retention of urine, which had to be drawn off by the catheter. The powders were continued every hour; and the following pills were administered:—

R.—Ol. tigllii gtt. ij.  
Miccæ panis q. s. ut fiant pil. ij.

A blister was also applied behind the ear. No effect was produced by the croton oil; and the vitality of the system was too much reduced to be affected by the blister; the pupils were contracted to a point, and there was a slight distortion of the mouth. On the 14th, there was evident mercurial fætor of the breath; the tongue was thickly coated, and the mouth covered with sordes. There appeared to be, at the same time, an improvement in all the symptoms; the intelligence was not lost; she endeavoured to say something, but was unable to articulate. She died on the 16th of October.

On examining the body, eighteen hours after death, the membranes of the brain were found to be slightly adherent, and opaque, at the summit, but the substance of the encephalon was of good consistence. The anterior half of the base of the cerebellum was highly injected, and the membranes were opaque. The substance of the cerebellum in the central portion was firm. Very little fluid was found in the lateral ventricles. At the anterior margin of each lobe of the cerebellum, there was a deposit of hydatids in the membranes, which was most marked on the left side; beneath this deposit, the cortical substance was softened, as well as the medullary, to the depth of half an inch. No other part was examined. The case was interesting on account of the mildness of its manifestations, and the length of time it took in running its course. Such cases are unquestionably often taken for insanity.

## CHAPTER II.

### OF THE NEUROSES.

SYNON. *Fr.* Névroses.

THE diseases of the nervous system, which have been thus far considered, are accompanied generally by lesions appreciable on dissection, and on which they are dependent. We have still to consider several most important affections, which are seated in the nervous centres, and which are, at times, accompanied—not perhaps induced—by pathological appearances of different kinds, some of which have doubtless been induced in their progress. It is to diseases supposed to have their seat in the nervous system, and which are indicated by disordered sensation, volition, or mental manifestation, without any apparent lesion in the structure of the parts, that the term *Neuroses* has been generally appropriated. There can be no question whatever, that all of them are accompanied by organic modification, otherwise it would be impossible to comprehend the singular aberrations of function; but still such modifications are not clearly revealed on dissection.

Observation has shown that many of the neuroses are accompanied by, if not dependent upon, debility of the constitution, and are benefited by the employment of tonics; and, according to the recent researches of M. Andral, the analysis of the blood would appear to confirm this view. In the generality of cases, the blood was remarkably poor in globules—the elevation or depression of which in that fluid he considers to mark strength or debility of constitution. In many cases, however, the blood was found to possess the healthy proportion of globules; and the general appearance of the patient indicated no constitutional debility. In such cases, other causes must be sought for.

The neuroses may be characterized by disorders of sensation, of motion, or of the intellectual and moral faculties, singly or combined.

The diseases of the nervous system, characterized by disorders of sensation, are various, and may be treated of in the following order:—

#### I. AUGMENTATION OF SENSIBILITY.

SYNON. Hyperæsthesia, Hyperæsthesis; *Fr.* Hypéresthésie; *Ger.* Uebermässige Empfindlichkeit.

Hyperæsthesia may affect the several senses. In *Nyctalopia*—(q. v.)—we have an example of it in the organ of vision;—the patient being unable to see distinctly in the full light of day, but distinguishing objects readily in obscurity. It is a defect under which the *Albino* labours; and it may be caused by remaining a long time in dark places, as in mines. It is the antithesis to *Hemeralopia*, in which the person can only see in the full light of day. The sense of hearing is at times amazingly exalted, giving rise to *HYPERACUSIS* or *HYPERACOE*, in which the patient is unable to bear the slightest noise. Both these affections, as has been shown, are common accompaniments of encephalitis and va-

rious cerebral diseases. In **HYPEROSPHRESIA** or **HYPEROSMIA**, the sense of smell is sometimes augmented to an astonishing degree. The author has elsewhere referred to several strange cases, in which persons have been able to distinguish individuals from each other in the dark by this sense alone. (*Human Physiology*, 6th edit. i. 146, Philad. 1846.) In disease, this condition sometimes exists. M. H. Cloquet refers to the case of a person affected with fever, who was unable to tolerate the disagreeable and overwhelming odour of copper, which was found to be exhaled from a pin that had dropped on his bed! and in cases of strange antipathies to certain animals, the sense of smell has detected their presence, when they were unobserved by persons in the apartment. **HYPERGEUSIA** or excessive sensibility of the organ of taste is occasionally met with, but not so frequently as the last. In **HYPERAPHIA**, or excessive acuteness of touch, the affection is at times partial; at others, it extends over the whole cutaneous surface; and is so excessive, that the individual cannot bear the slightest pressure. This condition is met with frequently; and often in persons labouring under neuralgia. Indeed, hyperæsthesia of the sense of touch is frequently one of the most prominent symptoms of that affection, and has been regarded, but without adequate grounds, as evidence of irritation of the medulla spinalis, or what has been very unhappily termed *rhachialgitis*. At times, this supersensitiveness is premonitory of encephalic mischief, but, more frequently, it is met with in nervous and highly impressible individuals. The author has recently had a case of excessive hyperæsthesia of the lower extremities, which continued for months, and was unaccompanied by any manifest mischief in the nervous centres. A highly exalted state of the sensibility—constituting *general hyperæsthesia* or *supersensitiveness*—is occasionally seen, in which the unfortunate sufferer is so *nervous*, as it is usually termed, that she cannot bear the slightest unusual impression to be made upon the senses without fainting, and has the *cænæsthesia* or *common feeling* so highly developed, that the minutest changes of atmospheric density and temperature produce disagreeable sensations. It is unquestionable, that different persons are not equally sensible to the same irritants. Some do not feel the least inconvenience from the application of an ordinary blister of cantharides, whilst, with others, the suffering is almost intolerable. The difference is, doubtless, laid essentially in organization, although habits of indulgence or resistance may favour or prevent its development.

**Causes.**—Extreme impressibility of the nervous system may be induced in various ways. It supervenes, at times, on profound and long-continued mental exertion, on want of sleep, great fatigue, and any agency that exhausts the nervous system; but it more frequently follows excessive evacuations of every kind, too copious bloodletting, or hypercatharsis; a rigid diet; and, still more, abstraction of those excitants to which the nervous system may have been habituated,—as alcoholic liquors or tobacco. Some of the most distressing cases of supersensitiveness, which the author has witnessed, have occurred in persons, who had suddenly quitted chewing or smoking.

**Treatment.**—The treatment will have to vary with the cause.

Whenever it is practicable, this will of course have to be removed. The tonic system of medication, with a nutritious, but by no means exciting diet, will have to be prescribed; and, if it be practicable, a thorough change of all the influences surrounding the individual should be advised,—such a change as travelling air and exercise are capable of affording. The moral and physical revulsion, in this way induced, is often most salutary, and it is frequently the only agency that is found to be productive of any benefit.

Narcotics and sedatives have been recommended, and especially perhaps, lactucarium<sup>a</sup> and hydrocyanic acid.<sup>b</sup>

<sup>a</sup> R.—Lactucar. ꝑj.  
Mucilag. acaciæ fʒij.  
Syrup. fʒij.  
Aque camphor. fʒij.—M.

Dose, a tablespoonful, four times a day.

<sup>b</sup> R.—Acidi hydrocyanic. medicinal. ꝑʒj.  
Mucilag. acaciæ fʒij.  
Syrup. fʒj.  
Aque fʒj.—M.

The draught to be taken three times a day.

They are rarely of any service, and the more active narcotics, as opium, are found to be decidedly injurious: the supersensitiveness may be diminished whilst the patient is under their influence, but it supervenes to a greater extent when the narcotic influence has passed away.

## II. DIMINUTION, OR PRIVATION OF SENSIBILITY.

SYNON. Anæsthesia, Parapsis exers; *Fr.* Anesthésie; *Ger.* Unempfindlichkeit.

The existence of this condition in one half the body, or in detached parts of it, is an additional proof of the distinctive character of the nerves of sensation and motion. The loss of power of the nerves of special sensibility, of vision, audition, olfaction, &c., which is confined to them, does not fall under consideration here. General sensibility is, however, often lost by the condition of the nervous centres themselves; and, therefore, may be properly regarded in this place. In certain cases, the nerves of general sensibility of one side of the body may be affected with anæsthesia, whilst those of the other side are in a state of hyperæsthesia. Frequently, parts, distant from the nervous centres, are affected, and in a manner which does not admit of easy explanation. Thus, numbness of the fingers, or of a single finger, may announce the attack of cerebral hemorrhage; or occasional or constant numbness may affect portions of the extremity, without any indication of disease of the nervous system. Anomalous cases of this kind are, indeed, by no means uncommon. The degree, to which the loss of feeling may exist, varies. At times, it is total; so that boiling water or hot sealing-wax may be dropped upon the naked arm without pain being induced. These cases are very difficult of explanation. At times, they are caused by tumours pressing upon the nerves, or by some interference with the continuity of those cords; but, at others, they admit of no explanation in the existing state of knowledge. The anæsthesia has, occasionally, extended to such a degree, that the persons have lost all consciousness of existence. Such is said, by M. Andral, to have been the case with M. Baudelocque, who, for some time, considered himself dead.

Strange alterations in the sensibility of parts, and abolition of feeling as regards certain irritants, which usually elicit it strongly, are witnessed under the operations of the animal magnetizer. By impressions, made on the senses, perversion of the ordinary functions of the nervous system is induced, strikingly analogous to what we notice in catalepsy and hysteria, described elsewhere; and not more easy of explanation than those affections themselves. The effect, indeed, of the manipulations of the animal magnetizer, is to induce phenomena in the nervous system, which are eminently hysterical or *hysteroïd* in their character. These collectively have been termed *Anesthésie extatique*.

Anæsthesia is occasionally produced by the poison of lead. Twenty-three cases are noticed by M. Tanquerel des Planches. In four of these, it was deep-seated; in seven, the loss of sensation was confined to the skin, and in twelve, the eye was affected. In the eleven cases of deep-seated and superficial anæsthesia, there was paralysis of the corresponding muscles in three; in four, the paralysis of motion and of sensation occupied different parts; and, in four, the loss of sensation was unaccompanied by loss of motion. In one case, amaurosis and anæsthesia of the skin existed together. The lesion of sensation was always partial; sometimes being confined to certain parts of the abdomen, chest or neck, and sometimes to the limbs; and it shifted its seat or varied in extent. It generally made its attack suddenly, and speedily attained its full extent. Sometimes, however, it was preceded by slight numbness.

**Treatment.**—In the obscurity as to cause and pathology, it is difficult to lay down any general indication of treatment. The main object, doubtless, is to awaken the dormant energies of the nervous centres, or of the nerves connected therewith. With this view, excitants are demanded; as epispastics, *douches* of hot water, the flesh-brush, electricity in the form of sparks or shocks, or of galvanism; acupuncture, applied either to the surface or along the vertebral column; moxa, &c. &c. Strychnia may likewise be employed internally; or half a grain may be sprinkled on a denuded surface to obtain the endermic action of the remedy. It is scarcely necessary to say, that when the anæsthesia is produced by working in lead, the patient should quit his occupation immediately, and not resume it until he is perfectly recovered.

### III. PERVERSION OF SENSIBILITY.

SYNON. Paræsthesia, Paræsthesis; *Fr.* Perversion de la Sensibilité.

The facts, connected with perversion of sensibility, are more curious than useful therapeutically. It may affect any one of the senses. The touch may exhibit it—*PARAPHIA*—so that errors may be constantly indulged in regard to the shape, size, consistence, weight and temperature of bodies. The taste is also strangely perverted at times—*PARAGEUSIA*—and the most disgusting objects are taken as food with the highest relish. The longing of pregnancy is an exemplification of it; as well as the singular perversion of taste observed in the chlorotic, who not unfrequently fancy slate-pencils, ashes, &c., in preference to articles that are eatable, and relished in health. Cases, indeed, are on record, in which men have been induced to eat human excrement.

By custom, however, substances may become agreeable, which excited at first great disgust, as in the case of game, kept until it has attained a marked *fumet*. The smell, too, is often perverted—**PAROSMIA**. The author was formerly acquainted with a lady, who scented her snuff with the tincture of assafœtida. Yet this may not be such a perversion as it might at first sight appear. The Orientals regarded assafœtida as *le Manger des Dieux*, whilst with us it bears the name *Stercus diaboli*, and in the vernacular, *Devil's dung*. The senses of vision and audition are likewise subject to various depravations. Perverted audition—**PARACUSIS**—presents itself in various forms—as in the *erethitic nervous deafness* of M. Kramer, in which different sawing and other sounds are heard—in *tinnitus aurium*, double hearing, &c. &c. Perverted vision—**PAROPSIS**—exhibits equally strange anomalies;—as double vision, *Diplopia*, *Dittopia*, *Visus duplex*; Ger. *Doppelsehen*:—seeing the half of objects—*Hemiopia*, *Hemiopsia*, *Visus dimidiatus*; Ger. *Halbsichtigkeit*:—seeing objects that have no existence, as cobwebs, muscæ volitantes, sparks before the eyes, &c.—*Pseudoblepsia*, *Metamorphopsia*; Fr. *Berlue*; Ger. *Falschsehen*, *Gesichtstäuschung*, &c. &c. Many of these are symptomatic of various diseases of the nervous system, and will fall under consideration elsewhere.

**Treatment.**—Where these various perversions are dependent upon any morbid condition, they will disappear on the removal of the primary affection; often, however, those of the smell and taste are mainly dependent upon habit, and can only be rectified by a properly adapted moral management.

#### IV. HEADACHE.

**SYNON.** Cephalalgia, Cephalæa, Dolor capitis; Fr. Céphalalgie, Mal à tête; Ger. Kopfschmerz.

Headache may be general or confined to a part of the head, and it is a common concomitant of disorders of various organs. “It appears, indeed,” says Dr. J. H. Bennet, “under so many forms, is produced by such a number of causes, is in its nature so variable, and is connected with such different morbid lesions, that a perfect knowledge of it, with a view to treatment, is obtained with the greatest difficulty.” It is a frequent consequence of a debauch, and, at such times, is entirely nervous. It appears, too, to arise idiopathically, to be purely nervous, and little connected with the condition of the blood-vessels. On other occasions, it is a symptom of ordinary indigestion, the pain being at times seated at the anterior, and at others at the posterior part of the head.

**Causes.**—The causes of headache are extremely various. It is a common symptom of many diseases, and, consequently, forms a part of them. It has been supposed by some, that a predisposition may be laid in organization; and the female sex, from greater nervous excitability, appear to be more liable to it. In such as are especially predisposed, an attack is brought on by the most different, and, at times, singular causes. Some cannot take ice cream and champagne, mixed; others the smallest quantity of milk, &c. &c. without the most

rending headache resulting. It is impossible, indeed, to enumerate all the causes; there is hardly a disturbing agency but may occasion it.

**Treatment.**—In the treatment of headache, the cause must be carefully investigated, and, if practicable, removed. When produced by a debauch, the evacuation of the contents of the stomach, and the subsequent exhibition of soda water, will afford essential relief: usually, however, in such cases, time is necessary; and, commonly, employing the stomach in its accustomed operations when the dinner hour arrives, and the use of a few glasses of wine or of any alcoholic liquor, will remove it. When it arises idiopathically, it may usually be allayed by full doses of narcotics, administered internally as well as externally. Strychnia and extract of aconite have been administered with good effect in nervous headache.

R.—Strychniæ gr. iij.  
Alcohol fʒj.—M.

Dose, 6 to 24 drops, twice or thrice a day.

The freshly prepared extract of aconite has been given in half grain doses repeated every two or three hours.

When headache is connected with polyæmia or evidences of hyperæmia of the brain, bloodletting will be the proper agent. When caused by indigestion, it must be treated by remedies appropriate to that condition.

#### a. Sick Headache.

SYNON. Cephalalgia spasmodica, Cephalæa spasmodica, C. nauseosa.

In the ordinary sick headache, which is characterized by rending pain at the top of the head, with violent retching and vomiting, the circulation being generally but little affected, and which appears to be essentially nervous, inasmuch as it is often brought on by looking at any dazzling object, by too tight ligatures about the head, or by a comb pressing too powerfully upon it, no single remedy affords marked relief. To prevent the violent retching, warm water, with or without the addition of a little flour of mustard, or chamomile tea, may be freely allowed: a sinapism may, also, be applied to the stomach, and opiates may at times be administered with benefit. Generally, after the pain has continued for a while, the patient sinks to sleep, and wakes about the middle of the day—if the attack has commenced in the morning—nearly, if not entirely well. The paroxysms are extremely irregular in their recurrence, and certainly not marked by periodicity.

In all the forms of nervous headache, immediate relief is often afforded by the application of strong counter-irritant lotions to the forehead or temples. These may consist essentially of a strong solution of ammonia.

R.—Liq. ammon. fortiss.  
Sp. camphor. aa fʒj.—M.

A piece of cotton or linen, folded six or seven times, may be impregnated with the lotion, and be kept upon the part for a few minutes, care being taken that the ammonia does not reach the eyes or nose.

An analogous lotion has been much used in Great Britain and this



country—*Granville's antidynous lotion*, (see the author's *New Remedies*, 5th edit. p. 205, Philada. 1846;) and another has been proposed still more recently by M. Raspail.

R.—Liq. ammon. part. 100.  
 Aquæ destillat. part. 900.  
 Sodii chlorid. part. 20.  
 Camphor. part. 2.  
 Essentiæ rosæ q. s.  
 Solve.

The shower-bath is also, at times, very serviceable.

b. *Hemicrania*.

SYNON. Cephalæa hemicrania, Clavus, Megrin; *Fr.* Hémicrâne, Migraine; *Ger.* Hemicranie, Halbseitiges Kopfweh, Migräne, Neuralgie des Kopfs, Nervöser Kopfschmerz.

This word has been variously corrupted. From hemicrania has been formed *Migrania*; *Fr.* *Migraine*; English *Megrin*. It is cephalalgia confined to one half the head; as *Clavus hystericus*—*Fr.* *Clou hystérique*—is headache confined to a small portion of the head, at times to not more than can be covered by the finger, and as it is not unfrequently accompanied by hysteria, or occurs in hysterical individuals, it has received the epithet hysteric—*hysteric nail*;—Sydenham having compared the sensation to that of a nail driven into the scalp. It returns periodically in many cases; and, consequently, falls under the *Cephalalgia intermittens* of many writers; but, by some, it is considered to be a form of neuralgia, and it is satisfactorily treated by remedies appropriate to this condition of the nerves. M. Piorry regards one form of the disease to be neuralgia of the iris. Persons, he says, who fatigue the eye, experience headache, and seek obscurity to get rid of the pain; the eyes are red; and in hemicrania there is vomiting as is observed in certain operations on the eye. It occurs at all ages, but not so frequently before the period of puberty; and it is believed that it is capable of being transmitted from parent to child; in other words, that a decided predisposition may, in this way, be laid in organization.

At times the attack is preceded by depravations of vision and audition, and the stomach exhibits signs of derangement by the presence of nausea, and vomiting—frequently of an acid matter. At others, there are no premonitions of the attack, which is excessively severe, often restricted to one side of the head, and affecting the forehead and temples more especially. There is no encephalitis, yet the encephalon is remarkably sensible to light and sound; and the skin, especially of the parts affected, cannot tolerate the slightest touch. Although the intellect may be clear, singular perversions of the senses are occasionally witnessed.—as numbness and sense of formication, with tremors of the limbs; perversion of the sense of taste; diplopia, and sundry other depravations of visions, with tinnitus aurium and other strange noises in the ears. The stomach is sometimes disordered during the paroxysm, and, at others, not; but the circulation is unaffected. During the severity of the pain, the secretion from the lachrymal glands is often profuse; and so much irregularity is induced in the organs of secretion generally, that jaundice supervenes. The occur-

rence of jaundice in states of high nervous excitement is indeed not uncommon. One of the most interesting cases, that ever fell under the author's care, to which reference is made under the head of Jaundice, was induced in that way.

The paroxysm does not generally continue longer than two or three hours; although, at times, it far exceeds this. The periods of its recurrence are very irregular; sometimes, only two or three times a year; at others, however, an attack occurs every week, and even oftener than this.

**Treatment.**—As in all paroxysmal affections, much cannot be done during the attack. Every source of irritation must, of course, be avoided. Cold water may be applied to the head either in the form of lotion, or in that of the shower-bath; or of a *douche* from the spout of a teapot held a considerable distance above the head, provided the hyperæsthesia of the surface will admit of it. Should evidences of hyperæmia exist to a great extent, so that there is danger to the encephalon from this cause, blood may be drawn from the general system, or locally; but this can be rarely needed, and the author has seen serious evil arise from repeated bleeding during the paroxysms, practised under the dread of congestion or hyperæmia of the encephalon.

Carbonic acid—as contained in soda water, or given off from the ordinary soda powders—is often extremely grateful; and morphia, belladonna, and other narcotics, have been of service in some cases, but not in others. Belladonna has also been used externally in the following combination:

R.—Aq. lauro-ceras. f ℥iv.  
 Æther. sulphuric. ℥j.  
 Ext. belladonn. ℥ss.—℥j.—M.  
 To be applied as a lotion to the head.

When narcotics are administered, the dose should be large, and repeated so as to produce their full effect.

Attention should be paid to the condition of the organs of digestion; and if any source of irritation exist there,—either in the form of food, morbid secretions, or inflammation,—they must be removed by the appropriate remedies. During the attack, the excruciating pain may be relieved, at times by the application of the counter-irritant lotions, recommended under the last variety of headache. M. Dufresse has published the history of a case, in which hemierania and facial neuralgia were cured by compressing the primitive carotid of the affected side.

It is, however, during the interval, that therapeutical agents should be most energetically employed; and if the paroxysms recur frequently, great care may be demanded to diagnosticate the actual pathological condition. Usually, the indication will be—by appropriate tonics, but not by diffusive excitants—to induce a new action in the nerves of the stomach, and, through them, on the system of nutrition generally. With this view, after the stomach has been cleared by a gentle emetic, (*pulv. ipecac. gr. xx.*) and the intestinal canal by a mild cathartic,<sup>a</sup> subcarbonate of iron may be given twice a day in the dose of half a drachm in a little sugar and water, or molasses; and the

quantity may be gradually increased until, at the expiration of a month, the patient takes one drachm twice a day.

\* R.—Rhei pulv. gr. x.  
Hydrargyr. chlorid. mit. gr. iij.  
Zingib. pulv. gr. v.—M.

Should signs of gastric irritation arise during its administration, the cathartic may be repeated; but it is very important, that the tonic should not be wholly discontinued, and that its use should be persevered in for at least a month, before much amelioration can be expected.

In one of the most severe cases of hemicrania, that the author ever saw, and which—under the idea of encephalic hyperæmia—had been treated by bloodletting on each attack, so that the patient—a female—was compelled to be bled once or twice a month, and when the author saw her was oligæmic and exceedingly impressible—subcarbonate of iron, given as above directed, entirely restored her to her family, to which she had been wholly unable to attend for months previously. Since then—many years ago—she has had no attack. In like manner, when the paroxysms exhibit anything like periodicity, the salts of quinia may be prescribed; the sulphate, mixed with snuff, and snuffed up the nose, has been found useful.

R.—Quinæ sulphat. gr. x.  
Acid. sulphur. dil. gtt. viij.  
Aquæ fʒv.—M.

Dose, a third part, every two hours, prior to the expected paroxysm.

The preparations of arsenic, and the different antiperiodics recommended in intermittents, may likewise be prescribed.

In cases, which had resisted the ordinary antispasmodics and antiperiodics, M. Devay found the valerianate of zinc eminently successful. It may be given in the dose of a grain and a half in the twenty-four hours in the form of pill.

The treatment of *clavus hystericus* resembles that of nervous headache and hemicrania.

It is proper to observe, that severe cephalalgia is at times owing to inflammatory or other mischief in the frontal sinuses, which may require attention.

## V. ACRODYNIA.

SYNON. Erythema acrodynia; Fr. Acrodynie, Erythème épidémique de Paris; Ger. Sommerseuche von Paris.

This name, from *ακρος*, “extremity,” and *ὀδυνη*, “pain,” was given to an epidemic that prevailed in Paris, in the summers of the years 1828 and 1829; the prominent symptoms of which were pain in the ultimate extremities,—as in the palms of the hands, and the soles of the feet. The pain was compared by the patients to that which would be produced by needles or pins run into the parts. It was augmented by pressure, continued intense for a while, then diminished, and after a time disappeared, leaving, however, the skin deprived of its usual feeling, and red,—the cuticle separating in large flakes. This change of the cuticle occurred occasionally three or four times; and the

colouring matter became abnormal,—the surface appearing of a blackish brown approximating to that of the negro. This was the usual course, but some of the sick suffered from the pain in the hands and feet only. Occasionally, other parts of the dermoid texture sympathized; the mucous membrane of the intestines becoming especially irritated, as indicated by vomiting, redness of tongue, pain at the pit of the stomach, diarrhœa, colic, &c., &c. In other cases, however, the digestive organs were little—and in others, again, not at all—deranged. The only constant symptom, indeed, was the pain in the hands and feet, whence it was regarded by M. Andral as a neuralgia of the palmar and plantar surfaces. With as much propriety, however, it might have been classed amongst the exanthemata.

The duration of the epidemic was a month or six weeks; and it disappeared totally before winter. It was a precursor of cholera, and not less strange in its nature and causation than the cholera itself. Not a single individual, however, died of it, although great numbers were attacked, and these chiefly of the poorer classes, and in parts of the French metropolis where the population was crowded together.

Numerous investigations were made into the pathological characters of the disease; and multitudinous trials of remedial agents; but no clear light was thrown on its pathology; and in the latter periods of the epidemic, the therapist confined himself to the use of the warm bath, fomentations, frictions and emollient and narcotic cataplasms.

About the same period, a singular and similar complaint, the Dengue, appeared in the southern parts of this Union, and in the West Indies. It is described in another part of this work.

## VI. ECLAMPSIA.

SYNON. *Sypspasia convulsio.*

Under the term eclampsia we may consider the epileptiform convulsions of children, which occur generally during dentition; and also those that supervene during gestation or in the parturient state. The term has been restricted, however, by some to clonic convulsions, in which there is loss of consciousness, but without foaming at the mouth,—a definition, which would include convulsions of the gravid, parturient, and childbed state.

### a. *Convulsions of Children.*

SYNON. *Eclampsia, Epilepsia acuta infantum, E. febrilis infantum, E. puerilis; Fr. Convulsions des enfans, Eclampsie des enfans; Ger. Eklampsie, Epilepsie der Kinder, Fraisen der Kinder, Krämpfe der Kinder, Scheurchen der Kinder, Convulsionen der Kinder, Gefraisch, Gichter, Jammer.*

This affection is by no means uncommon. Prior to two years of age, the infantile frame is extremely impressible; and, on the application of certain exciting causes, is readily thrown into convulsions.

**Diagnosis.**—The symptoms cannot be mistaken. At times, without any dulness, or premonition, but more commonly after having exhibited signs of indisposition for a longer or shorter period, the child falls down in a state of insensibility, with convulsive agitation of the mus-

cles of the face, and of the voluntary muscles of the upper or lower extremities, or both. The eyes are turned up; the face becomes livid; and there is, at times, slight foaming at the mouth, although this last symptom is commonly wanting. The state of unconsciousness, and of convulsion, varies as to duration. When the paroxysm is slight, all the symptoms may pass away in a few minutes; but more frequently, the duration is greater and the child gradually recovers its consciousness, or may remain dull and lethargic for hours afterwards.

It does not often happen, that a fatal termination occurs in the first paroxysm; but if the pathological cause of the convulsions exists to a serious degree, the child does not recover its wonted sprightliness, and fit follows fit, until death relieves the little sufferer. The bills of mortality of our cities exhibit, that infantile convulsions are a very dangerous affection, but still the large majority of cases end favourably;—many of those registered being convulsions, which had supervened on other maladies.

**Causes.**—There is, doubtless, in children predisposed to convulsions, a peculiarity of constitution, which is occasionally derived from progenitors, who have themselves been similarly affected. The disease is likewise, at times, of a family character, where the progenitors have been wholly free from it. M. Andral alludes to a family of five children, all of whom died of convulsions, although the parents had not suffered from them.

It has been already remarked, that, under the age of two years, there is unusual impressibility of the nervous system. Owing to this cause, the surgeon avoids undertaking any serious operation, under the apprehension that he might develop such impressibility to an injurious degree. There is, doubtless, also, a vast difference in children, as to the degree of this impressibility—some being infinitely more affected than others by impressions made on the senses; and more liable to disturbed dreams and to sudden affrights. It has been asserted, that such children can be recognised by the enormous size of the brain; by precocious intelligence; mobility of facial expression,—as blushing and turning pale suddenly, and under the influence of the most trifling causes. To a certain extent this is true, but we have not observed the coincidence of excessive development of the brain in such cases.

The disease is rarely, perhaps, centric. It is almost always dependent upon eccentric causes; and generally, perhaps, upon some source of irritation in the digestive tube. Dentition is commonly invoked as the most frequent cause; the irritation, produced in the nerves distributed to the gums, being propagated to the nervous centres, and reflected to the muscles, which are thrown into convulsions. In like manner, food of an indigestible nature—or, if digestible, in too great quantity—is an ordinary exciting cause, particularly in those who are predisposed to the disease by an organization derived from their progenitors. Intense mental emotions—as great terror, and severe bodily pain—may likewise induce them.

The state of the circulation—especially of that of the encephalon—is unquestionably concerned in the causation of convulsions. We

observe some children always affected in this manner on the super-vention of fever; but whether it be the hurried circulation or its cause, that induces them, may admit of doubt. Hyperæmia of the encephalon, idiopathic or symptomatic, has, however, generally been considered intimately associated with their occurrence. This may be, and doubtless often is, the cause in children of a full habit, who exhibit a strong febrile movement, and plethoric condition, before and during the paroxysm; but we are quite satisfied, that they more frequently arise from an irritability and mobility of the nervous system, which is totally unconnected with such a condition of the vessels of the system in general, and of the encephalon in particular; and consequently, that depletion so indiscriminately employed, is by no means adapted for all cases. In those, for example, who are predisposed by organization to convulsions, and in whom they are induced by some irritating cause, depletion could scarcely fail to add to the mobility. Moreover, it has been before observed, that convulsions may be induced—like coma—by loss of blood; and that, from opposite pathological states, we may have the same disordered actions induced. Under such circumstances, the most careful attention is demanded on the part of the practitioner to decide, whether he have to combat a polyæmic or anæmic condition of the encephalon.

As in the case of other neuroses, one attack lays the foundation for others; generally, however, as the child grows older, the tendency diminishes, and rarely persists—even in those who are predisposed to them by organization—beyond the period of puberty.

**Pathological Characters.**—These are not distinctive. At times, one or other of the pathological conditions of the encephalon, already described—hyperæmia, or mollescence, or encephalitis—is met with; but, at others, no morbid appearances are perceptible. The irritation of the encephalon has been produced by irradiations proceeding from other parts of the economy, and no traces may be left on the nervous centres.

**Treatment.**—This must, of course, vary according to the causes and symptoms. If these denote encephalitis or hyperæmia of the encephalon, blood may have to be taken from the general system, or by means of leeches applied to the temples; but, as the general pathological condition is great impressibility of the nervous system, acted upon in many cases by derangement of the primæ viæ, the exciting causes must be removed when practicable. With this end, if a tooth be pressing against the gum, it must be set at liberty; and even if it have not advanced far enough for this purpose, scarification of the gums will afford relief. Almost always, too, it will be advisable to administer a gentle emetic, with the view of removing any offending contents of the stomach, and after the emetic has done operating, to direct a cathartic; (*hydrarg. chlorid. mit. gr. v.*)

R.—Antim. et potass. tartr. gr. ij.

Aquæ ℥j.—M.

Dose, a fourth part every twenty minutes, until it operates.

If the child be still in the fit, friction may be employed over the

surface of the body; and it may be placed in the warm bath; but this, in the hurry and confusion which always prevail, is attended with so much inconvenience, that it has been abandoned by some practitioners. Dr. R. B. Todd has found decided advantage from the application of ice to the back of the neck and spine, probably in the way of revulsion. Immediately on its application, in one case, the breathing became easier, the child sighed several times, the pulse fell rapidly, and in ten minutes the convulsions had wholly ceased.

Should it be considered urgent to evacuate the contents of the bowels, by way of inducing revulsion in the lower part of the intestinal tube, an ordinary domestic enema of molasses and salt, or of gruel and salt may be administered; or, if the child be very young, a suppository of yellow soap may answer every purpose. Should the paroxysm persist, the feet may be placed in sinapised pediluvia, and the cold *douche* be applied to the head from the spout of a teapot.

In the asphyxia, occasionally seen in the convulsive fits of children, it has been advised to practise artificial respiration. In the case of an infant, five days old, which had a succession of violent convulsions for thirteen or fourteen hours, and, on the average, a fit every hour, Dr. Cape was satisfied, that the child would have been lost, had not artificial respiration been practised, by breathing into the mouth of the infant from his own, closing the nostrils, compressing the thorax after each inflation, and observing the natural periods of frequency as far as possible. By means of the artificial respiration, the colour—especially of the face and lips—turned from purple to red; but still there was no breathing, until a convulsive gasp announced the termination of the fit.

In the intervals, every care must be taken that the child's diet is of the proper character. No fruits having skins, nor any kernels, which are always difficult of digestion, should be permitted; the bowels should be kept free; and due pains be taken to strengthen the nervous system by exercise in the open air, and by the tepid or cold bath. Where the predisposition laid in organization is considerable, the only safety for the child is in avoiding the exciting causes.

Some time ago, a peculiar form of *infantile convulsions* was described by Mr. J. W. West. It seems to consist in bobbing of the head forward, which are slight at first, but, in process of time, may become so frequent and powerful as to cause a complete heaving of the head forwards towards the knees, and then immediately relaxing into the upright position,—something similar to the attacks of *emprothotonos*. These bowings and relaxings, in the case of Mr. West's own son, were repeated alternately at intervals of a few seconds, and from ten to twenty or more times at each attack, which would not continue more than two or three minutes. Of these attacks, the child had two, three, or more in the day, which came on whether he was sitting or lying. The child did not lose its consciousness. Mr. West, having met with no case similar to it, applied to Sir Charles Clarke, Dr. Locock, Sir Astley Cooper, and others. The first of these gentlemen had seen four cases, and from the peculiar bowing of the head,

he called it the *Salaam convulsion*. Dr. Locock had seen two cases, and Sir Astley Cooper none like it. Sir Charles Clarke knew the result of only two of his cases. One recovered perfectly, the other became paralytic and idiotic, and died at the age of 17. Mr. West had heard of two other cases, which lived—one to the age of 17; the other to 19; both were idiotic.

As no opportunity has occurred for necroscopic researches in these cases, the pathology of the disease is unknown. It would be curious—the author remarked in the last edition—to investigate, whether the lesion gives any countenance to the views entertained by a distinguished physiologist, M. Magendie, in regard to the cerebral seat of the forward impulsion, referred to at page 16 of this volume. Recently Dr. Paget, of Cambridge, England, has drawn attention to “morbid rhythmical movements,” such as bowing movements of the trunk, rotatory movements of the head, vibration of a single limb, and other singular motions, of which he has referred to numerous cases, and which he is disposed to explain according to the views of M. Magendie. These cases were characterized by morbid symptoms, not like those of chorea, but definite and repeated in regular rhythm, and in this respect differing from those of chorea, which are indefinite and irregular. His paper is contained in the *Edinburgh Medical and Surgical Journal* for January, 1847, and merits perusal.

b. *Convulsions in pregnant and parturient women.*

SYNON. Eclampsia gravidarum et parturientium, Puerperal convulsions; *Fr.* Convulsions des Femmes enceintes, en Travail et en Couche; *Ger.* Convulsionen oder Eclampsie der Schwangeren, Gebärenden, und Wöchnerinnen.

Pregnant and parturient females may be attacked with convulsions, which are decidedly hysterical; and with others, which are more of an apoplectic character; but the convulsions, which are most frequently met with, and seriously complicate the parturient state, are epileptiform. Dr. F. Churchill, has collected the following numerical estimates of cases, that have occurred in the practice of several distinguished obstetricians:—

In	1,897 cases of labour,	Dr. Bland met with	2 cases of convulsions.
“	10,387 “ “	Dr. Jos. Clarke	19 “
“	2,947 “ “	Dr. Merriman	5 “
“	640 “ “	Dr. Granville	1 “
“	398 “ “	Dr. Cusack	6 “
“	848 “ “	Dr. Maunsell	4 “
“	16,654 “ “	Dr. Collins	30 “
“	399 “ “	Dr. Beatty	1 “
“	1,266 “ “	Dr. Ashwell	3 “
“	2,510 “ “	Dr. Mantell	6 “
“	600 “ “	Dr. Churchill	2 “
“	20,357 “ “	Mad. Boivin	19 “
“	38,300 “ “	Mad. Lachapelle	61 “

It is idle to attempt any general average from these estimates; but if we were to esteem them correct, and to exhibit a fair proportion of cases of convulsions to the whole number of cases of parturition, they would yield a ratio of about 1 in 610. Dr. Churchill omits the reports of Mesdames Boivin and Lachapelle, as he does not know how far the report of the one may include that of the other; and



reckons 79 cases of convulsion in 38,306 cases of labour, or about 1 in 485 cases.

**Diagnosis.**—The symptoms of the convulsions, that take place at the latter period of utero-gestation, and during parturition, are essentially those of epilepsy; they would seem, indeed, according to Dr. D. Davis, to be almost absolutely identical; excepting, that, in puerperal convulsions, “he has never been able to trace a recollection of the sensation called *aura epileptica*.” Numerous cases, however, of true epilepsy occur, in which no *aura epileptica* precedes the paroxysm. Similar premonitory symptoms in other respects are witnessed; but, generally, in the convulsions now under consideration, there is more evidence of vascular hyperæmia, as indicated by tumefaction and flushing of the face, and injection of the vessels of the tunica conjunctiva. By some, an intense pain in the forehead has been described as an important prodromic symptom; and, by others, a severe pain in the stomach, which has been noticed in the worst cases. At times, however, as in epilepsy, there is no warning;—the pupils become dilated, the face more tumid and injected; the eyes fixed, and the patient loses all consciousness, and is temporarily convulsed. The respiration is at first irregular, and being forced through the closed teeth, and the frothy secretions, has a peculiar hissing sound, but subsequently becomes almost suspended.

The paroxysm is not generally of long duration. Sometimes, in a few minutes, the convulsions become less and less violent, and gradually subside; and, after a variable period, the disordered actions pass off, leaving the patient lying quietly, but with the pulse usually more accelerated. Occasionally, consciousness is entirely restored,—great sense of debility, headache and confusion alone remaining; but in other, and much the less favourable cases, consciousness is imperfect, and the confusion of intellect is striking; whilst in others, again, she lies in a state of total insensibility, with more or less sibilant or stertorous respiration. After an uncertain interval, there is a return of the convulsions with a succeeding interval; and this alternation may take place repeatedly; as often as eighteen or twenty times in the course of the twenty-four hours. Even where recovery takes place, it may be very gradual. The state of coma may remain for a considerable time; or the patient may continue deaf, or blind, or incapable of speaking or moving,—phenomena, which indicate the serious modification induced in the functions of the encephalon. In some of the fatal cases, the patient may lie comatose for some time, and ultimately die with symptoms greatly resembling those of apoplexy. It is very well known, as remarked by Professor Meigs, that not a few instances do occur, wherein the fatal blow is struck at the very onset, and that some women never speak, and never show the smallest sign of reason or sensation, from the moment of invasion, but sink at once into the stertorous apoplectic sleep, that leads rapidly to the sleep of death.

The cases of convulsions that occur during parturition would appear to leave a great tendency to abdominal inflammation, a fact to be borne in mind by the practitioner.

The danger of puerperal convulsions is great. From the reports of

different observers, collected by Dr. Churchill, it would seem, that about one in four proves fatal. It would be consolatory, were it correct, as stated by the same writer, that after complete recovery, the patient is not more liable to similar attacks in her after pregnancies: yet it is proper to remark, that such is not the opinion of all observers, and Dr. Churchill himself observes, in a former page of his valuable work, that "persons previously afflicted with convulsive affections are certainly predisposed to them at this time."

**Causes.**—These are not always clear. It would appear to be necessary, that there should be a predisposing condition of the great nervous centres; yet, it is not easy to say in what that predisposition consists. The disease is rarely, perhaps, centric,—that is, commencing in the nervous centres. The immediate cause may be seated elsewhere;—doubtless, generally in the uterus; but it may be in the stomach or bowels; whence it acts upon the great nervous centres eccentrically. It has been ascribed to intemperance; to liability to convulsive affections—from previous attacks; to mental emotions—as frights; to hyperæmia of the encephalon, induced during the uterine contractions; and to atmospheric influence, yet, it must be admitted, that the etiology is sufficiently obscure.

**Pathological Characters.**—Examination after death throws little or no light on the nature of the diseased condition. In numerous examinations that have been made of those who died during the existence of this form of convulsion, no alteration whatever was found in the condition of the encephalon: in other cases, the vessels have been turgid with blood; and, in others, serum has been found effused into the ventricles, or into the great cavity of the arachnoid. The affection would appear to belong unequivocally to the neuroses, as we have defined them. Whatever influence is produced on the neurine is certainly as inappreciable as in many of the other affections involving aberration of the functions of sensation, volition and mental and moral manifestation, which fall under this division of diseases of the nervous system.

**Treatment.**—Whatever may be the condition of the encephalon in this alarming affection, almost all writers appear to be agreed, that our hopes of safety must rest on diminishing the amount of the circulating fluid, and on diverting the morbid actions from the encephalon towards other parts of the economy. With this view, blood should be taken in a full stream, so as to make a decided impression on the system; the quantity to be drawn being judged of by the urgency of the case. It has been said, by Professor Meigs, that "it is scarcely worth while, almost, to open a vessel to draw off eight or twelve ounces of blood. The patient ought to lose from thirty to sixty ounces at one venesection, if possible; and if signs of faintness appear, they should be hailed as the harbingers of success." Copious bleedings have generally, indeed, been advised, and some consider bleeding from the jugular vein to be peculiarly advantageous, because, in this mode of operating, blood is taken away from the head. This is true, however, as regards the external part of the head only. To relieve the *internal* part, bleeding from the *external* jugular can afford no more relief

than when the operation is performed at the bend of the arm. It may be necessary to repeat the bleeding again and again, and should there be any objections to the farther employment of general bloodletting, leeches or cupping on the temples or the nape of the neck may be substituted. The whole plan of treatment, recommended in hyperæmia of the encephalon, and in encephalitis and meningitis, is indeed appropriate here; and advantage might accrue from compressing the carotid arteries, in the manner recommended in several convulsive affections. (The author's *New Remedies*, 5th edit. p. 201, Philad. 1846.)

It need scarcely be said, that whilst it is considered desirable to diminish the amount of the circulating fluid, but little nourishment should be permitted; and that the patient should not be allowed to use watery drinks freely; inasmuch as under the copious draughts from the circulatory system, they would not fail to pass readily by imbibition through the coats of the blood-vessels, and supply the loss that had been sustained. All irritations of every kind ought also to be carefully avoided, and hence the apartment should be kept dark, and as free from noise as possible.

Much difference of sentiment has existed in regard to the administration of opiates, after active antiphlogistics have been employed, and the disease is somewhat subsiding. The opinion of some excellent observers has been in the affirmative. Mercury, given so as to affect the system, has also been beneficial.

In regard to the propriety of inducing delivery, all are of accord, that it is essential, provided it can be done without injury—the convulsions generally ceasing after it has been accomplished. It is universally admitted, however, that in the first instance we ought scarcely to interfere beyond rupturing the membranes, which sometimes advances the progress of the labour. Turning has been frequently recommended; but it would seem to be a hazardous measure. In all the three cases, in which it was employed by Dr. Ramsbotham, it proved fatal; and a recent writer, Dr. Collins, is strongly opposed to it. When the forceps can be applied, and the state of the parts is favourable, they may be had recourse to with much propriety. Dr. S. Harris, of Clarkesville, Va., has published two successful cases of convulsions before the full term of utero-gestation, in which delivery was induced by the forcible entry of the uterus, perforation of the head and the use of the hook; but the practice is not generally considered advisable.

Continued ill health is apt to follow puerperal convulsions; and much care on the part of the practitioner is demanded, to avert many evil affections, which are amongst their sequelæ.

## VII. EPILEPSY.

SYNON. *Epilepsia*, *Morbus Caducus*, *M. comitalis*, *M. Hercules*, *M. lunaticus*, *M. sacer*, *M. divinus*, *Clonus epilepsia*, *Sypspasia epilepsia*, &c., *Falling sickness*; *Fr.* *Épilepsie*, *Mal caduc*, *M. divin*, *M. Saint Jean*, *M. de terre*; *Ger.* *Fallsucht*, *Jammer*, *böses Wesen*, *schwere Noth*.

The disease strikingly resembles eclampsia. It comes on in paroxysms, which are occasionally periodical, but generally recur at irregular intervals, and at times at distant periods. M. Andral places it,

not among the convulsions, but in the class of *complex neuroses*; and the reasons he assigns are,—that convulsions are not the only phenomena; that lesions of sensibility and intelligence are coexistent, and, moreover, he affirms, convulsions are not always present, and, in hospitals for the treatment of these diseases, they give the name *petit mal* to epilepsy without convulsions. It will be seen, presently, with what propriety this division can be made.

**Diagnosis.**—Frequently, before an attack of epilepsy, the patient has premonitory or prodromic symptoms, similar to those which foretell nervous affections in general,—as depravation of one or more of the senses; flashes of light, or dark spots before the eyes; tinnitus aurium; vertigo; confusion, or slight intellectual aberration; cephalalgia; numbness of some part of the body, as of a finger or a toe; sense of formication or disagreeable itching, &c. &c. Along with these symptoms, referable to the organs and functions of animal life, the organic functions may be disordered; and hence, palpitation, or irregularity in the action of the heart, with violent pain in the chest, vomiting, &c., are occasionally present. The *aura epileptica* has been described by authors as a common prodromic symptom; but, according to the author's experience, it rarely exists as described. It is said to be a peculiar sensation originating in the extremities—as if an *aura* or air were passing upwards towards the heart or the brain, and when it reaches either of these vital organs, the individual immediately falls, deprived of all consciousness, and the paroxysm commences. Whether these precursory symptoms have presented themselves or not, the epileptic falls suddenly, as if at once deprived of all sensation, volition, and mental and moral manifestation; sometimes uttering a distressing cry, apparently of surprise; at others, moaning; and, at others, again, leaping, running, or turning rapidly round before he falls. The British and American practitioners make no distinction of the disease into varieties or stages, but the French pathologists—many of them at least—adopt three varieties: *first*, perfect epilepsy—*grand mal*; *secondly*, vertigo, confusion and partial convulsions, *petit mal*, *épilepsie vertige*; and *thirdly*, *absence*, in which there is no convulsion, but simply loss of sensation and intelligence. This division is, however, unnecessary, as the only difference between the *grand mal* and the *petit mal* is in the intensity of the symptoms, whilst it may admit of question, whether the term epilepsy can be applied with propriety to any affection in which convulsions are not a symptom.

When the patient falls, deprived of consciousness, the face is observed to be tumefied and livid; the mouth distorted and generally foaming; the eyes turned up and fixed; the pupils dilated, or contracted, but immovable; the jaws so firmly closed, that the tongue is sometimes seriously injured; and at others, even the teeth are broken. The convulsions are general, and affect especially the muscles of voluntary motion; but, at times, they implicate one side more than the other; the inspiratory muscles, likewise, participate in the convulsions, so that the respiration becomes laborious; and the inspirations are short, frequent, and loud; the circulation is occasionally unaffected, but generally it is disturbed; occasionally, there is a momentary arrest of the respiration,

and, according to M. Piorry, "if pleximetric percussion be practised at this moment, the heart appears excessively hard to the finger which percusses," and the excretions are frequently passed involuntarily. This state does not usually continue longer than a few minutes, before the violence of the distortion diminishes; the vascular turgescence disappears; the face becomes pale; the surface bedewed with perspiration, and the patient is in a state of great prostration; in many instances remaining devoid of consciousness, and completely comatose, with loud respiration. This condition may persist for twenty minutes or half an hour; at the expiration of this time, the patient begins to recover; but he still complains of confusion, with lassitude, and pains in the head and limbs,—having no knowledge of what has occurred, except from his feeling of languor, and the wounds and bruises he may have received during the paroxysm. At other times, furious mania succeeds, which may require restraint. To this state, which may continue from a day to two or three days, the terms *Mania epileptica*, and *Epileptic delirium* have been given.

The intervals between the paroxysms vary greatly. Some do not recur oftener than once a year; but more frequently, they return repeatedly; at times, every month or week; and, occasionally, once or oftener during the day. When the paroxysms are very frequent, they are not always fully formed; the patient may merely lose consciousness, and exhibit slight convulsions in the muscles of the face, which speedily, however, pass off, and may be scarcely noticed by those present.

Most commonly, in confirmed epilepsy, the attacks come on during the night, and not long after the patient has gone to sleep, so that he may have no knowledge of the fact except from the feelings of languor and lassitude which he experiences the following morning. The cause of this has been supposed to be the horizontal position, which facilitates the flow of blood to the head by the arteries; but it is more probably owing to inappreciable modifications of the nervous centres themselves during sleep, which are favourable to the production of the epileptic condition. Between the paroxysms, the patient is at times healthy; but, more commonly, he suffers more or less from impairment or depravation of some of the senses, or from dulness of the intellectual faculties; and in long-protracted cases, this frequently ends in a state approximating to, if not identical with, fatuity. It has been affirmed, indeed, that of any given number of epileptics, two-thirds, at least, are in a state of idiocy or dementia. Of 385 epileptic cases, recorded by MM. Esquirol and Calmeil, 46 had hysteria, 12 monomania, 30 mania, 145 dementia; 34 were furious, 8 idiotic, 50 generally reasonable, but subject to loss of memory or extravagant ideas; some had slight delirium, and all a tendency to dementia; and, in the remaining 60, the intelligence was perfect.

Epilepsy may terminate in health, especially when it occurs prior to the age of puberty. At this period, owing to the evolution that takes place, the morbid condition is changed, and the disease disappears. After the age of puberty, these salutary changes are scarcely to be expected, although the disease does occasionally cease sponta-

neously, or under the influence of appropriate remedies. Most commonly, after a duration of years, it occasions the supervention of other maladies of the nervous system, under which the patient sinks. It rarely happens, that death occurs in a paroxysm, and when it does, it is owing either to the resulting hyperæmia of the encephalon, or to the depressing character of the disease itself, from which the patient does not rally. Amongst the most common consequences have been recorded,—imbecility and insanity; yet Cæsar, Mahomet, and Napoleon, all of whom,—it is affirmed,—were epileptics, would seem to have retained their mental powers unimpaired.

**Causes.**—Young persons are certainly more subject to epilepsy than the adult; and the latter are more so than the aged. It would appear, also, to be more common among females than males after the age of seven, according to some observers; but this is not the author's experience. It is probable, indeed, as has been suggested by Frank, that in some of the statistical details, hysteria has been included, so as to swell the proportion of epileptic females beyond the true point.

It has been a question whether epilepsy ought to be regarded as an hereditary disease; but we have no statistics to settle this. It is probable, that the affirmative should be admitted. *Fourteen* epileptic women, according to M. Bouchier, had *fifty-eight* children, of which *thirty-two* died young and in convulsions. Of the *twenty-six* that survived, *fourteen* were not attacked with epilepsy, or any other of the neuroses; *seven* had various affections of this kind, but without convulsions; *two* were epileptic; *two* had simple convulsions; and one was hysterical. The statistics of M. Leuret, given hereafter, are not favourable, however, to the idea of hereditary predisposition. Climate, too, seems to constitute an occasional cause. This we should expect: atmospheric heat develops all diseases that are attended with great mobility and irritability of the nervous system; and, accordingly, recruits, proceeding to warm climates and residing there, are sure to have attacks of epilepsy more frequently, or to have the disease developed, if predisposed to it.

Amongst the exciting causes have been enumerated the following:—excessive mental application or emotion, especially frights; tickling the soles of the feet, or the sides; overpowering or peculiar odours; masturbation and venereal excesses; great fatigue; long protracted watching; over-suckling; excessive pain; the presence of worms in the intestinal canal; repercussed eruptions, &c. The agency of some of these may admit of doubt; but there is no question, that any powerful or unwonted impression may be an exciting cause when a predisposition exists. M. Meyer has published some cases of what he terms *epidemic epilepsy* occurring in schools. In consequence of a single girl being attacked with epilepsy, numerous others became affected; most of the girls, it appears, were approaching the age of puberty, and they were all of a highly excitable temperament. It is probable, indeed, that these were cases of hysteria rather than of epilepsy. Many cases, however, are recorded, in which the disease appears to have been produced by the sympathy of imitation by witnessing a paroxysm in another.

The idea has long existed, that the paroxysms of epilepsy may be connected with the condition of the moon; but there is no reason whatever for this belief. The following table of the attacks of a young gentleman, who had been for years subject to epilepsy, was furnished by the father—himself a respectable medical practitioner of Pennsylvania—on consulting the author in the case of his son:

1839. Months.	Days of the week.	Age of the moon.	Symptoms of alarm, but not followed by convulsions.	Convulsions.	Period between convulsions.
Feb. 16th	Saturday	4th day		Convulsion.	
23d	do.	11th do.		do.	7 days.
April 27th	do.	12th do.		do.	63 do.
May 3d	Friday	19th do.		do.	6 do.
28th	Tuesday	14th do.		do.	25 do.
June 19th	Wednesday	8th do.		do.	22 do.
24th	Monday	13th do.		do.	5 do.
July 17th	Wednesday	6th do.		do.	23 do.
25th	Thursday	14th do.		do.	8 do.
Aug. 22d	do.	12th do.	Alarm.		
28th	Wednesday	18th do.	do.		
Sept. 21st	Saturday	13th do.	do.		
Oct. 2d	Wednesday	24th do.	do.		
18th	Friday	18th do.		do.	85 do.
Nov. 1st.	do.	24th do.		do.	14 do.
22d	do.	16th do.		do.	21 do.
Dec. 14th	Saturday	8th do.		do.	22 do.
20th	Friday	14th do.	do.		
28th	Saturday	22d do.		do.	14 do.
1840.					
Jan. 27th	Monday	22d do.	do.		
Feb. 21st	Friday	18th do.		do.	51 do.
29th	Saturday	25th do.		do.	8 do.
April 9th	Thursday	7th do.		do.	40 do.
15th	Wednesday	13th do.		do.	6 do.
May 1st	Friday	1st do.		do.	16 do.
23d	Saturday	21st do.		do.	22 do.
29th	Friday	27th do.		do.	6 do.
June 17th	Wednesday	17th do.		do.	19 do.
July 2d	Thursday	3d do.		do.	15 do.
10th	Friday	11th do.	do.		
18th	Saturday	19th do.		do.	16 do.
24th	Friday	25th do.	do.		
Aug. 7th	do.	7th do.		do.	14 do.
			8	25	

It would appear, that in this case, 8 paroxysms happened in the first quarter of the moon; 10 in the second; 8 in the third; and 7 in the fourth. In regard to the days of the week, 2 attacks happened on Monday; 1 on Tuesday; 6 on Wednesday; 4 on Thursday; 11 on Friday; 9 on Saturday; and none on Sunday. In consequence of the paroxysms having occurred most frequently on Friday and Saturday, these days were most dreaded by the patient, and this circumstance had probably great effect in reproducing them. The attacks, in this case, were almost universally in the afternoon, and never in the night, which—as already seen—is by no means the general rule.

Researches made by Dr. M. M. Wilson, at the time resident physi-

cian to the Philadelphia Hospital, on the female patients in the epileptic wards, equally exhibited, that there was no connexion between the phases of the moon and the occurrence of epileptic paroxysms.

In regard to all these points, some statistical information recently afforded by M. Leuret, is full of interest. Of 106 cases, 24 or nearly one-fourth, began to be affected between the 10th and 14th years of age; 18 were first attacked between the 15th and 19th years; and 16 between the 20th and 24th. Fifty-eight, consequently, of the whole number were first attacked between their 14th and 24th years. Of the 106 cases, the disease was ascertained to have existed either in the father or mother in 6 instances only; and in not more than 8 cases was it found, that the parents had died of any disease of the brain; in 3 there was insanity; in 2 apoplexy; and in one paralysis: one patient committed suicide; and one suffered under meningo-cephalitis. Of the 106, 30 had been drunkards; 24 addicted to masturbation; and 15 to venery. The actual or presumed cause of the first attack was terror in 15 cases; masturbation in 12; drunkenness in 6; anger in 2; distress in 2; falls in 2; libertinism in 1, &c.—30 had an attack very regularly once a fortnight; 17 once a month; 13 once a week; 9 every three or four days; 4 almost every day; 2 every day; 1 every two months; 3 every three months; and 24 at very irregular intervals. In 35 the attacks supervened in the night especially; in 29 they were as frequent in the day as in the night; in 12 they occurred frequently in the day; in 8 during the day only; in 8 in the night only; in 3 in the morning only; in 3 others generally in the morning; and in 1 in the evening only.

Perhaps disorders of the digestive canal are the most common exciting causes of epilepsy, and accordingly we often find the paroxysms recur as certainly as aliment, improper in character or quantity, has been received into the stomach. In such case, the disease is *eccentric epilepsy*. Dr. M. Hall, as before observed, considers all convulsive diseases to be affections of the true spinal marrow; and ranks epilepsy, also, among centric convulsions, which may be induced by any disease within the spine, whether effusion, tumour, or exostosis, &c. Diseases too, within the cranium, “by irritating the excitator nerves or the medulla oblongata, induce convulsions or epilepsy,—too frequently, alas! of an incurable character.” The same may be said of disease within the spinal canal itself.

**Pathological Characters.**—There are no anatomical characters, which can be regarded as peculiar to epilepsy. Such is the expressed view of some of the best pathologists. Recent writers, indeed, MM. Bouchet and Cazauvielh, whilst they accord with MM. Foville and Delage in their view, that mania consists in acute or chronic inflammation of the cortical substance of the brain, are of opinion, that epilepsy consists in chronic inflammation of the medullary substance.

There must, doubtless, be some modification of structure in the brain of an epileptic, which gives occasion to the disease, and to death, and yet that modification may be altogether inappreciable. Many morbid appearances are met with in the brains of epileptics, but not one that has not been observed in other encephalic or spinal affections:—the



encephalon has been found softened or indurated, or signs of hyperæmia, or of encephalic hemorrhage, or of encephalitis, have been apparent; but none of these belong to epilepsy, or distinguish it from other diseases. If the patient die, therefore, during a paroxysm, or soon after, these appearances may be present; if, during the interval, the encephalon may appear to be in all respects normal, or there may be a tumour, or an exostosis, which, after all, may have been occasional causes only, and throw no light on the pathology of the disease. Dr. J. H. Bennet affirms, that he saw, in the possession of M. Magendie, a preparation of a brain taken from an epileptic, whose intelligence was perfect during the intervals between the paroxysms, although two tumours, growing from the dura mater, had considerably pressed upon both anterior cerebral lobes. One, on the left side, was the size of a walnut, and had hollowed out for itself a portion of the nervous mass; whilst the other, on the right side, was much larger, and intimately connected with the substance of the brain, so that its exact extent could not be ascertained.

**Treatment.**—As the attacks of epilepsy are rarely preceded by prodromic signs that are unequivocal, opportunity does not frequently exist to prevent a paroxysm. If, however, warning should be afforded, it may be advisable to endeavour to make a new nervous impression, so as to disturb the morbid catenation. If food, improper by quality or character has been taken, one of the direct emetics,<sup>a</sup> which operate speedily, may be administered; or a full dose of an opiate<sup>b</sup> may be given, to induce a new impression on the nervous system; and if the aura epileptica exist, a ligature may be applied between it and the upper portion of the limb, for the like reason.

<sup>a</sup> R.—Zinci sulphat. ʒss.  
Aquæ cinnam. fʒxj.  
Syrup. fʒj.—M. et f. haustus  
emeticus.

<sup>b</sup> R.—Tinct. opii gtt. lx.  
Syrup. papav. fʒj.  
Aquæ fʒxj.—M. et fiat haustus  
anodynus.

Boerhaave is asserted to have prevented a paroxysm by taking a red-hot poker, at the moment of the expected attack, and threatening to push it down the throat of the patient if he should have a fit. Compression of the carotids has likewise been found serviceable, not only in the way of prevention, but during the paroxysm.

In the paroxysm, much cannot be done. It must have its course; and attention must be directed to the prevention of mischief to the patient from his own convulsive movements. To obviate injury to the tongue, a cork, or a piece of wood, wrapped in cloth, may be placed between the teeth; and the head may be kept somewhat raised to prevent hyperæmia of the encephalon as far as practicable. This is all that is necessary, unless the signs of hyperæmia there, or in the lungs, should be marked, when bloodletting may be indicated; but this is not easily practised, and is, indeed, scarcely ever needed, until the convulsions have ceased, and a deep comatose condition has supervened; and even then, an interesting question arises, which has been previously discussed, whether the coma may not be allied to a condition the very opposite to that for which bloodletting is, at times, indicated. M. Dubois d'Amiens, refers to the case of an epileptic, treated by M. Andral, who died of coma, and in the ventricles of

whose brain were found ten or twelve ounces of serum; but even this does not show incontestably, that hyperæmia existed, which might have demanded bloodletting; for it has been seen elsewhere that when animals are bled to death, effusion of serum into the ventricles may be expected.

The treatment between the attacks—as in all paroxysmal diseases—is the most important, and must, of course, vary materially, according to the causes that induced it, if these can be at all appreciated. Of old, the most disgusting agents, capable of exciting a disagreeable impression on the imagination, or on the gustatory nerves, or both, were much employed; and, in modern times, the various antispasmodics, whose effects are exerted in this manner, have been largely administered; but, at the present day—when all antispasmodics are esteemed to be relative agents only—there is no one in which confidence is reposed as regards its adaptation to every case and character of epilepsy. Ambergrise, assafœtida, castor, musk, amber, turpentine, and valerian, were once much used, but now they are scarcely ever prescribed. Revellents,—as blisters, setons, moxas, the actual cautery, and ammoniated lotions,—have been employed; and, occasionally, no doubt, with benefit; but the actual cautery applied to the vertex, as it has been recommended by some, has produced—it is asserted—unfortunate results, and consequently ought to be employed with caution. The object being to excite a new nervous impression, and to divert the nervous action from the encephalon towards the surface,—perhaps the intermittent revulsion, caused by successive blisters to the nape of the neck, may be capable of producing all the effects of the articles belonging to the class. At times, a seton is inserted in the nape of the neck with the same view; and the only objection to it is, that the organism becomes accustomed to its presence, so that its effects are lost or impaired. Still, the cases are numerous, in which the seton, as well as other forms of irritation, has appeared to exert great effect in postponing the paroxysms. In the one, of which a table was given, exhibiting the periods of the returns of the paroxysms in connexion with the phases of the moon, the longest period of immunity—85 days—comprised the time the patient wore a seton in his neck. In a case, too, in which the author was consulted, along with Dr. Chapman, of Philadelphia, by Dr. Wootton, of Lunenburg, Virginia, the patient, who had suffered from repeated attacks of epilepsy, had almost an entire suspension of the disease, whilst an accidental ulcer continued open upon his leg. On the other hand, the author has recently had a case in which the fits were evidently increased in number by eccentric irritation excited in this manner.

M. Fiévée, has published some cases of epilepsy, that were cured by severe cauterizations, made with caustic potassa on each side the cervical and dorsal vertebræ,—fresh cauterizations being made every five or six weeks. Cold or tepid bathing is generally of service, and, by the reaction it induces, tends to produce an equable excitement in the nervous system, which, in the generality of cases, is the object to be had in view; and hence the utility of agents belonging to the class of tonics, and the caution with which powerful antiphlogistics should

be used. The general pathology of epilepsy would, indeed, sufficiently suggest, that the lancet should not be had recourse to, unless with much circumspection.

Of the tonics that have been extolled, of late years more especially, in the treatment of epilepsy, we may enumerate, as more particularly worthy remark, nitrate of silver, the preparations of copper, iron, and zinc, indigo, and mugwort. Nitrate of silver, in the hands of many practitioners, has been attended with the greatest success; and such has been the case in the author's own experience. It is not probable, that it ever enters the circulation as nitrate of silver, in the small doses in which it is administered. When this salt comes in contact with chlorohydric acid, which is always present in the stomach when any substance is there, it is decomposed, and chloride of silver is immediately formed. In this state, the silver probably enters the circulation; and, in long-protracted cases, is deposited in the corpus papillare, where it undergoes, on exposure to light, the change of colour which gives a slaty hue to the complexion to some of those who have long employed it. This hue at times persists through life, and is a great objection to the use of the agent. Owing to the nitrate undergoing this decomposition in the stomach, it has been proposed to administer the chloride in those affections in which the nitrate is usually given internally. It was freely exhibited by Dr. Perry, whilst resident physician at the Philadelphia Hospital, and appeared to him to be as effective as the nitrate. Twelve grains, given daily for three months, produced no unpleasant symptoms, and in no case did discoloration of the skin succeed. In epilepsy, three grains were given four or five times a day, with therapeutical effects similar to those of the nitrate of silver, but—Dr. Perry thought—more marked. The experience of the author has led him to think the chloride as efficacious in epilepsy as the nitrate. The oxide has, likewise, been given in the same diseases as the nitrate in half-grain doses twice a day; but of it the author has had no experience. It, also, would seem to discolour the skin.

It has been affirmed, that a combination of silver with iodine does not induce discoloration of the skin, and that the use of iodine will remove such discoloration, where it has already occurred; but farther observation is needed to establish this. Dr. Charles Patterson, who maintains this view, has recommended the following form. (See p. 79, of this volume, Art. ARGYRIA.)

R.—Argent. iodid.

Potass. nitrat.  $\text{aa}$  gr. x.

Tere simul ut fiat pulv. subdil.; dein adde

Glycyrrhiz. pulv.  $\text{ʒss}$ .

Sacchar.  $\text{ʒj}$ .

Mucilag. acaciæ q. s. ut fiat pil. xl.

Dose, one, three times a day.

Nitrate of silver is said to have produced chronic gastritis, corrosion, and even perforation of the stomach; but although the author has administered it, and seen it administered largely, he has never witnessed these results. In one case, in which the paroxysms appeared to have been postponed under its employment, chronic enteritis occurred, but there was not sufficient reason to believe that it was caused

by the nitrate. In other cases, indeed, constipation has accompanied its use. By some practitioners, it has been commenced with in the dose of one-sixteenth of a grain, twice a day, and this has been gradually augmented until twenty grains in the day have been taken. The practice with the author is to commence with half a grain twice a day,<sup>a</sup> increasing the dose every fortnight by half a grain in the twenty-four hours.

<sup>a</sup> R.—Argenti nitrat. ℞ss.  
Ext. gentian. ℥j.  
Fiat massa in pilulas xx. dividenda.

After it has been continued for about six weeks, it may be advisable to substitute, for three or four days, one of the mineral tonics prescribed below, and then to resume it; but the patient should be firmly impressed with the belief, that no advantage is to be derived, unless this—as well as every remedy employed in epilepsy—is persevered in for a long time.

The preparations of copper, iron and zinc, have been administered by some physicians in preference to nitrate of silver. Cupri acetat, cupri sulphat, and cuprum ammoniatum, have all been prescribed,<sup>a</sup> but the last seems to have been most extensively used.

<sup>a</sup> R.—Cupri acetat. gr. v., seu  
— sulphat. gr. v., seu  
— ammoniat. gr. v.  
Ext. gentian. ℥j. fiat massa in pilulas xx. dividenda.  
Dose, one, three times a day.

The dose of each may be gradually increased, as in the case of nitrate of silver, watching the effects upon the digestive organs.

All the preparations of iron have been recommended, and their agency is identical; but ferrum ammoniatum and ferri cyanuretum are more employed at the present day than any of the others. The first of these preparations may be given in the dose of three grains, gradually increased to fifteen or twenty in the course of the day.<sup>a</sup>

<sup>a</sup> R.—Ferri ammon. ℥j.  
Ext. gentian. ℞ij. fiat massa in pilulas xx. dividenda.  
Dose, one or two; and, in time, five or six.

Ferrocyanuret of iron or Prussian blue has been recommended; and in very obstinate cases, not dependent upon organic mischief, is said to have succeeded.

R.—Ferri ferro-cyanur. gr. iij.—xxxvj.  
Sacchar. ℥ij. misce et divide in pulveres vi.  
Dose, one, two or three times a day.

The various preparations of zinc, but especially the oxide<sup>a</sup> and the ferro-hydrocyanate,<sup>b</sup> have likewise been given; and many testimonials have been adduced in favour of their beneficial agency.

<sup>a</sup> R.—Zinci oxid.  
Ext. gentian. aa. ℞ij. Divide in  
pilulas xx.  
Dose, one to three and more, twice a day.

<sup>b</sup> R.—Zinci cyanur., seu  
Z. ferro-hydrocyan. gr. xv.  
Ext. glycyrrhiz. ℥ij. Fiat pilulæ lx.  
Dose, one, morning, noon, and night, gradually increasing the quantity.

Dr. B. Babington, gives the preference to the sulphate, and prefers

it, on the whole, to nitrate of silver; for although it may not be quite so efficacious, it is free from the objections to which the nitrate is subject. In some cases, he has given as much as thirty-six grains three times a day, but such large doses are not often necessary. Dr. Babington has found, that this quantity was taken equally as well in solution as in pills. Care was had to increase the dose gradually, as in the case of tartarized antimony.

Within the last few years, indigo has been administered successfully by many practitioners, especially in Germany. (*New Remedies*, 5th edit., p. 373, Philad. 1846.) Observers, however, have not agreed as to its virtues. In the Philadelphia Hospital, the author was very desirous of testing its efficacy, and trials were made, by two of the resident physicians, on its antiparoxysmal powers. Two of seven cases, reported by Dr. Hardy, were apparently cured, two ameliorated, and three without any decisive results. In these cases, the indigo was begun with in the dose of  $\mathfrak{3j}$ . which was usually doubled daily until the patient took  $\mathfrak{3ij}\frac{1}{4}$ , in the day, which quantity was persevered in for some weeks.

R.—Indig. in pulver. subtilissim. redact.  $\mathfrak{3ss}$ .

Pulv. aromat. gr. v. f. pulvis.

Or,

R.—Indig. pulv. aquæ guttis nonnullis subact.  $\mathfrak{3ss}$ .

Pulv. aromat.  $\mathfrak{3ss}$ .

Syrup.  $\mathfrak{3j}$ . Misce et fiat electuarium.

In some of the cases, the fæces, urine, and perspiration, were coloured blue. In other trials, however, instituted by Dr. McKee and others, the results were not as favourable; and Dr. Pereira states, that he has tried it in a considerable number of epileptic cases, in the London Hospital, but without observing the least benefit from it.

*Artemisia vulgaris* or mugwort was brought forward as an anti-epileptic in Germany. It is most efficacious when given about half an hour before the paroxysm, in the dose of a heaped-up teaspoonful (from 50 to 70 grains), in warm beer,—the patient being put to bed immediately, covered up warm, and allowed warm small beer to drink, so as to favour diaphoresis. The German journals contain numerous cases of its beneficial employment, and where there is no organic disease of the encephalon, substances, which, like the *artemisia*, are tonic,—and the remark applies to the therapeutical agents last mentioned,—may be productive of advantage. The following form of preparation has also been suggested.

R.—Rad. artemis. vulgar. concis.  $\mathfrak{3j}$ .

Coque cum aq. fontan. q. s. per semi-horam ad colat. Oj.

Dose, half a cupful, every two hours.

Or a drachm of the powder may be given three times a day, gradually increasing the dose.

It is obvious, however, that a wide difference must exist among cases of epilepsy, and that where the organic modifications are considerable, as indicated by concomitant mania or idiocy, little can be expected from any remedy; but even in such hopeless cases, the number of paroxysms appears to have diminished under the use of the tonics described. Where the cerebral affection is slight, and more

functional than organic, indigo, artemisia, and the other remedies extolled in epilepsy may be useful. Their main efficacy consists, perhaps, in the new impression which they make, in appropriate doses, upon the nerves of the stomach, and through them on the whole system; but to effect the revulsion to the proper extent, it is necessary, that the dose should be augmented day by day, and the remedy be continued in large doses for a sufficient length of time.

The efficacy of tonics is dependent on the new impression made by them upon the nervous system; and, with similar views, narcotics have been largely administered. They may succeed in postponing the paroxysms when they occur frequently, but when the intervals are very long, it is difficult to draw any satisfactory inferences in regard to their, or indeed any other, agency. The object is to administer opium, belladonna, or stramonium, nux vomica or strychnia, until a decided effect is induced;—in the case of the three first, until signs of incipient narcosis supervene, and of the last, until they begin to exhibit their peculiar effects upon the system.

It need scarcely be remarked, that whenever—under the administration of any of the agents mentioned—signs of vascular excitement or hyperæmia supervene, these must be removed by appropriate anti-phlogistic treatment, and then the former course be resumed.

Dr. E. Sharkey, of Cork, has affirmed, that in the treatment of idiopathic and uncomplicated forms of epilepsy, digitalis has had as much success, in proportion to the number of trials made, as nitrate of silver. Dr. Sharkey's views—both pathological and therapeutical—are, however, too vague and unsatisfactory to enable us to feel confident in the results of his experience. The efficacy of digitalis, he thinks, probably depends on a specific power! The remedy had been used by others, and it is said with success. It would seem to have been, from time immemorial, an empirical remedy in the rural districts of Ireland, and to have been administered most incautiously. Dr. Corrigan, who is one of those that have employed it in regular practice, prefers the Infusum Digitalis of the Dublin Pharmacopœia, the strength of which is the same as that of the Pharmacopœia of the United States. He begins with a fluidounce every night at bed-time, increasing the dose after a week to a fluidounce and a half, and after another week, to two fluidounces, beyond which he found it rarely necessary to go, and continuing it until sickness of stomach and dilatation of the pupils occurred, when the dose was diminished by half a fluidounce or an ounce, until the maximum dose that could be borne without inconvenience, was ascertained, at which he continued its administration for two or three months. Given in this way, its use was attended by no inconvenience beyond an occasional attack of slight sickness of stomach in the morning, or headache, &c. The medicine had then to be omitted, and a day or two allowed to pass over before its use was resumed. With the exception of these symptoms, there was no perceptible effect, beyond slow action of the heart; and the patient was able to follow his ordinary occupations. It has been suggested, that digitalis only proves useful in cases where there is much arterial excitement, and that as this is not generally present, it will not be found generally use-

ful. It is more probable, however, that the good effects which have been ascribed to it, were mainly owing to its action upon the nervous system,—like most of the agents already mentioned, which have gained credit for the removal of epilepsy.

Throughout the whole of the interval, the regimen should be unirritating; the diet consist of articles easy of digestion,—animal food, in preference to the succulent vegetable; and the patient should carefully avoid any aliment, that he has found to disagree with him. Should signs of gastric disorder arise, an emetic, or a cathartic, or both, may be administered; for frequently the exciting cause of a paroxysm lies in errors of diet. Exercise in the open air, short of inducing fatigue; and the cold, tepid, or shower bath—provided they do not cause too great a shock to the system—should also be advised; and, in short, every agency which can give tone to the nervous system.

Where epilepsy has been caused by an external injury of the head, the operation of trephining has been practised. Two cases were treated in London successfully in this manner, many years ago, by Mr. Cline; three were published in this country by Professor Dudley, of Lexington, Ky., and two others have been reported by MM. Renzi and Busse. The results, in all, were happy. The operation is, however, one of a serious character, and ought not to be had recourse to, unless there is every prospect, that the cause of the disease is seated in parts, which can be removed by the trephine. Dr. Isaac Parrish, of Philadelphia, has published a case, induced by injury of the head, in which the disease was removed by establishing an issue over the seat of the injury, combined with a course of constitutional treatment,—tonics, salt bath, &c. An incision about two inches long was made directly through the tender portion of the scalp down to the bone. It has also been proposed to tie the carotid arteries; and it is said that the results have been favourable. Dr. J. B. A. Strömlin affirms, that Professor Trousseau, of Paris, is so convinced of the efficacy of this mode of treatment, that he has several times heard him say, if either he or one of his children were subject to epilepsy, he would not hesitate to have the carotid tied on the side opposite to the one that was most convulsed. It need scarcely be said, however, that the practitioner should hesitate long before he adopts this *heroic* remedy.

#### VIII. CHOREA.

SYNON. Synclonus chorea, Chorea Sancti Viti, Ch. Sancti Modesti, Choreomania, Saltus Viti, Orchestromania, Ballismus, Epilepsia saltatoria, Morbus saltatorius, M. gesticulatorius, Hieranosis, Scelotyrbe tarantismus; *Fr.* Chorée, Danse de Saint-Guy, Danse de Saint-Wit, D. de Saint-Whitt; *Ger.* Veitstanz, Tanzkrankheit, St. Modestitzanz, St. Johannitzanz.

This singular disease—unquestionably seated in the nervous system—has received various appellations, and given rise to much speculation as to its nature.

**Diagnosis.**—Chorea is characterized by irregular and uncontrollable movements of portions of the body, or of the whole of it,—rarely, however, of the latter. Sometimes, one-half the body is affected; and it has been noticed, that the left suffers more frequently than the right, but statistical evidence is needed on this point. At other times, the

muscular motions are limited to certain parts—as to the face, one arm, or to separate muscles. The motions are of the most strange and fantastic character. When limited to the face, the muscles are in constant motion, so as to induce the most singular grimaces and contortions; the articulation is also affected at times, so as to occasion stammering,—which has, indeed, been defined—*a St. Vitus's dance of the voice*; and, occasionally, the respiratory muscles, and those concerned in deglutition, are implicated. At times, too—it is affirmed—the urine and fæces are passed involuntarily. The senses and intellect are commonly unaffected; but when the disease persists for a long time, it is apt to render the individual fretful and capricious; and, occasionally, the intellectual faculties are impaired to such a degree as to threaten idiocy. The nutritive functions are considered by many to be unconcerned, but there is unquestionably in this disease, as in most cerebral affections, an unusual degree of torpor in the digestive actions.

It is proper to state, that the symptoms are less marked, and frequently entirely suspended, during sleep, whilst the brain is occupied in its own acts: upon the same principle, any severe mental emotion may arrest the symptoms. A case is given by M. Serres, in which they were suspended during a fit of passion.

At times, the disease comes on suddenly; but, at others, there are premonitions. The patient exhibits evidences of great irritability of temper, with disordered digestive function; and, at times, palpitation, and other nervous symptoms,—twitching of the muscles of the face, arms, or legs, for example. Its duration is extremely uncertain; sometimes not longer than a few days; at others, it continues for months and even years, and does not finally disappear, until some great evolution takes place in the organism,—as at the age of puberty. It generally eventuates in health; but, at times, in some other of the neuroses, epilepsy especially. Fortunately, it is a good deal under remedial influence, and is not usually very obstinate. It is one of the affections most commonly feigned in hospitals and elsewhere, and can only be detected by careful watching, when the patient is off his guard.

**Causes.**—Amongst the *predisposing causes* must be reckoned age, for the disease is one of childhood. Of 32,976 children admitted into the Hôpital des Enfants, of Paris, during ten years, only 189, according to M. Ruz, were affected with chorea; so that it is not very common. Dr. David M. Reese, of New York, however, considers, that the disease is becoming increasingly frequent; and such must be the case, if his estimate be accurate, that he has employed arsenic, in his own practice, in upwards of two hundred cases. This indicates a degree of frequency, which the author's observation can by no means confirm. He has seen, perhaps, thirty cases. MM. Rillicet and Barthez, in their chapter on this subject, state that they had analyzed only 19 cases, and some of these were communicated to them by other observers. The age at which it prevails most is from 6 to 14, which would negative the idea of many pathologists, that masturbation is a powerful exciting cause. Another argument is the fact, that



sex affords a predisposition,—the number of females being much greater than of males; thus, of the 189 referred to above, 138 were females, and 51 males; and this is about the proportion, according to most observers. From the cases that have been recorded by different practitioners, it has been calculated, that the proportion of females to males affected is nearly, but not quite, 3 to 1.

In the observations of some—of MM. P. Frank and J. Frank, for example—chorea occurs chiefly in the scrophulous and the rickety. On the other hand, it has been affirmed by Dr. Elliotson, M. Ruz, and MM. Rilliet and Barthez, that no constitutional difference is perceptible between those who are affected with chorea and others. The discrepancy amongst observers is equally great in regard to the colour of the hair. Some, as MM. H. Bell, Ruz and Dufossé, affirm, that the majority of subjects are light-haired, the two last gentlemen having found, in 38 cases, only two with brown hair; whilst Dr. Watson remarks, that the disease occurs much more frequently in children having dark hair and eyes, than in those of a light complexion. It would appear, also, that a predisposition may be transmitted from parent to child.

Amongst the exciting causes are enumerated—powerful mental emotions,—as excessive fright or rage; masturbation; diseases of the stomach and intestines, &c. Numerous other causes have been pointed out, but they are not peculiar to this disease. It is unquestionable, that it may be developed by imitation, and hence the necessity, in boarding schools, of keeping the patient isolated, to avoid what has been called by M. Andral “a true nervous contagion.” It is proper, however, to remark, that a recent observer, M. Blache, states, that in the large Hôpital des Enfants, of Paris, he never saw it produced in this manner.

Dr. H. M. Hughes, next to fright regards rheumatism as one of the most common causes; and Drs. Bright, Copland, Babington, Begbie, and others, have drawn attention to the connexion of chorea, in certain cases, with affections of the heart and pericardium; and Dr. Addison has noticed mitral *bruit* or other signs of morbid action of the mitral valves, to be pretty uniformly present in chorea; which he is rather inclined to consider an effect of the disease than a cause.

**Pathological Characters.**—As the disease rarely proves fatal, there are but few opportunities for tracing its anatomical characters; and the opportunities that have been embraced have thrown no positive light on the seat or nature of the affection. By some, it has been conceived to be placed both in the brain and spinal marrow; and it has been referred to the spinal system, mainly under the idea that all convulsive affections have their location there, but in chorea, the disease consists rather in a badly regulated volition than in involuntary spasmodic contractions—induced by a morbid condition of the reflex system. By others, it has been regarded as a morbid condition of the tubercula quadrigemina; by those who regard the cerebellum as the great regulator of volition, it has been placed in that part of the encephalon. By others, again, the medulla oblongata has been found diseased; and, lastly, the majority of observers have not been able to satisfy them-

selves, that there was either in the encephalon or medulla spinalis any morbid appearances which could throw the slightest light on the pathology of the disease. In the case of a girl, nine or ten years of age, who died purely of chorea,—that is, worn out by the excessive and continued movement, no lesion whatever could be detected by Dr. Gerhard, of Philadelphia, in the brain or spinal marrow, although these organs were examined with the most scrupulous attention. It is evidently a functional affection of the nervous centres, in the large majority of cases, but of what precise nature we know not, except that, generally, signs of great nervous mobility and debility are present; and have to be energetically combated.

By Dr. Laycock, chorea is regarded as the precursor of hysteria,—in fact, as the hysteria of the female child.

**Treatment.**—The treatment of this disease has varied materially according to the pathological views formed of its nature. They, who have regarded it as an inflammatory affection of some portion of the encephalon, have recommended general bloodletting, or cupping, or leeches to the upper part of the neck, and over the occiput, with revellents—in the form of epispastics—over the same region. Under similar views, issues and frictions have been established along the spine.

There can be no doubt, that cases present themselves, accompanied by symptoms that demand, or appear to demand, the use of depletives; but the nature of the disease is, we think, anything but inflammatory, and, therefore, when any of this class of remedies—and *à fortiori* the more powerful—are employed, care must be taken not to add to the existing impressibility of the nervous system by pushing them too far: for these reasons, local is to be preferred to general bloodletting.

The use of cathartics was at one-time highly extolled, and there is no doubt, that good effects are to be obtained from them. It has been remarked, that torpor of the intestinal tube is a common concomitant; and it is obvious, that accumulation of fæcal matter in the intestines,—which, at times, takes place to an extraordinary amount,—must react injuriously on the nervous system, already inordinately impressible. Cathartics are, consequently, valuable therapeutical agents; and, moreover, they act most beneficially as revellents, by concentrating the vital actions towards a part of the nervous system less concerned in the malady. Cathartics, besides, administered occasionally so as to act briskly on the alimentary canal, instead of being debilitants, add tone to the system by the new excitement which they induce. It is only when pushed too far, that they exhaust by irritation, and are, therefore, improper in chorea, as well as in all the neuroses.

R.—Ol. tiglli gtt. j.  
Miccæ panis q. s. ut fiant  
pilulæ iii.  
Dose, one, occasionally.

R.—Jalapæ pulv. seu  
Rhei pulv. gr. vj.—x.  
Hydrarg. chlorid. mit. gr. ij.  
Zingih. pulv. gr. iij.—M.  
For one dose.

Along with purgatives, it has been proposed to associate the use of tartrate of antimony and potassa in large doses, given carefully so as to avoid the induction of vomiting; and cases of the efficacy of this mode of treatment have been published.

All the reputed antispasmodics—assafœtida, valerian, &c., and the various narcotics, have been used, and highly extolled by some practitioners; and doubtless, at times, the results have been favourable. It is, however, to the combination of tonics with cathartics, that we have to look for the most advantageous agency. Of the tonics, those belonging to the mineral kingdom have been preferred, as in the other neuroses. Oxide of zinc, sulphate of zinc, cuprum ammoniatum, and nitrate of silver, have been prescribed with great success by many practitioners, in the forms and doses described under EPILEPSY, p. 206, of this volume,) and the subcarbonate or sesquioxide of iron has been brought forward with high pretensions. Dr. Elliotson affirms, that he has had—he should suppose—forty cases in succession, all cured by it; but perseverance in its use is demanded,—the affection generally disappearing when the remedy has been given about six weeks or two months: in some obstinate cases, however, it has been necessary to continue it for twelve weeks. It is generally easily taken by children in molasses; and, in the case of those under and near the age of puberty, it may be commenced in the dose of ten grains twice a day, —increasing the dose weekly by five grains. Should it disagree with the stomach, a little aromatic powder may be added to it.

R.—Ferri subcarb. gr. x.

Pulv. cinnam. comp. gr. v.—M. et fiat pulvis.

To be taken twice a day in molasses.

Arsenic, in the form of the *liquor arsenitis potassæ* or Fowler's solution, has been given with benefit, and a writer already cited,—Dr. Reese, of New York,—affirms, that after very considerable opportunities, he has learned to rely upon the tonic powers of arsenic in preference to any, and all other, medicines of this class, and “has never known it to fail in effecting a radical and permanent cure.” In the most numerous subjects, varying from seven to sixteen years of age, he prescribes 6 or 8 drops of the *liquor arsenitis potassæ*, night and morning, gradually increasing the dose and its frequency. Should the ordinary symptoms of an over-dose of the arsenic appear, he discontinues the medicine for a few days, and then resumes it in a diminished dose. Whatever tonic, indeed, is employed, its use must be persevered in for weeks, and the dose be gradually augmented. Arsenic is also highly extolled by Drs. Babington and Romberg, and more recently Dr. Begbie, of Edinburgh, has affirmed, that in the experience of nearly thirty years, and in a large number of cases, he has never known it fail. In several instances it disagreed, but he did not abandon it on that account; its use was suspended for a few days or even a week, and resumed, perhaps to be suspended again; but he invariably found that the choreal jactitations became more and more modified after each intermission, until, at length, the disease yielded, and no permanent injury to the constitution ever resulted from its employment. In almost all cases, the arsenic was suspended as soon as evidence of its action on the system was observable, and before it could be said to have disagreed. The earliest manifestations of these effects are itching and swelling of the eyelids, redness of the conjunctiva, nausea and uneasiness at the pit of the stomach, and especially

“ a peculiar white silvery appearance of the tongue, seldom accompanied with tenderness. These invariably diminished, and disappeared in a few days after the medicine was withdrawn, and no other unpleasant consequences resulted.”

The plan, pursued by the author, and which he has found entirely satisfactory, has been—to administer a brisk cathartic twice a week, where the powers of the system would admit of it: and, at the same time, to give regularly and freely one of the tonics above-mentioned. Ferri subcarbonas and arsenious acid have answered every purpose; and, consequently, he has adhered to them; but any of the other mineral tonics may be substituted. Ferrocyanuret of iron has also been administered with success;—three grains being given in the form of pill three times a day.

R.—Ferri ferrocyanuret. gr. ix.  
 Ext. gentian. gr. xv.  
 M. et divide in pilulas vj.  
 Dose, two, three times a day.

In one case, related by Dr. Zollickoffer, of Maryland, a girl, twelve years old, was entirely cured in six days, after camphor, opium, quinia, assafœtida, nitrate of silver, and carbonate of iron, had been given in vain. Dr. C. J. B. Williams, regards the iodide of iron to be better than any other chalybeate in chorea. It pervades the system more rapidly, he thinks, and keeps the secretions more free. He gives it in doses of a grain three times a day, increasing the dose to four or five grains;—care being taken that the bowels are kept free. Dr. Romberg, of Berlin, prefers the chloride in three-grain doses thrice a day, associated with powdered rhubarb.

The cyanuret of zinc has been brought forward by the physicians of the Berlin Polyclinic Institute. It was begun with in the dose of one-third of a grain twice a day, and was gradually raised to fourteen grains in the 24 hours. Its efficacy has been confirmed by other observers. Iodine has likewise been given, and it is said with benefit, as well as strychnia and veratria. Strychnia has been used with good results by Dr. Romberg, Professor Trousseau, Dr. A. Ross, Dr. Griscom, of New York, and others. Professor Trousseau administers it during or after meals, in cautiously increased doses, until convulsive movements take place. These are to be kept up for about eight days, when, by diminishing the dose, a mere muscular stiffness must be kept up for a like period, and the remedy be persevered in for eight or ten days after all irregular movements have ceased. Eight cases are reported by Professor Trousseau, but—as suggested by Dr. Cowan—it is questionable, whether success should justify the employment of a remedy so difficult to regulate, especially in cases which seldom resist ordinary and well-known treatment. (*New Remedies*, 5th edit. p. 570, Philada. 1846.)

Oleum terebinthineæ has been found a valuable medicine in chorea, whether produced by worms or not. When the bowels are torpid, and the girl is of that age in which the first occurrence of menstruation may be looked for, its arrival has seemed to have been accelerated, and great relief produced by turpentine. It may be given alone, or associated with oleum ricini.

R.—Ol. terebinth.  
 — ricini aa f ʒij.  
 Mucilag. acaciæ f ʒj.  
 Aquæ menthæ f ʒivss.—M.

Dose, a fourth part, night and morning.

Testimony has been adduced in favour of *cimicifuga*, which—in large doses—is an acro-narcotic poison. According to many observers, it has been productive of most beneficial results. Dr. Kirkbride, of Philadelphia, always administers cathartics before he has recourse to it; and he considers general frictions with salt or the flesh-brush, and pustulation with croton oil over the spine, of much value in chronic cases. Happy effects were likewise derived from *cimicifuga* in a case of convulsions, occurring periodically, and connected with uterine disorder, by Dr. G. B. Wood. A teaspoonful of the powdered root may be given three times a day; or the following decoction.

R.—Rad. cimicifug. cont. ʒj.  
 Aquæ Oj.

Boil for a short time and strain.

Dose, two to four tablespoonfuls, three or more times a day.

Recently, Dr. J. B. Zabriskie, of New York, has recommended the powder of the dried root of *sanicula Marilandica*, sanicle, given to children eight or ten years old, in the dose of half a drachm three times a day. The author has no knowledge of other trials having been made with it.

Along with the internal remedies, which have been recommended above, the cold bath may be used, especially in the form of the shower-bath, or *douche*. The new nervous impression made by it is so salutary, that it has been thought by an able observer, M. Dupuytren, that no case of chorea could withstand it. Where too powerful a shock is produced by the cold *douche*, the tepid or the warm may be substituted; or simple cold or tepid bathing may be recommended. Dr. Babington has stated, that he was informed by a Russian physician, that in St. Petersburg a new practice has been adopted with eminent success in cases of chorea. The patient is placed in a bath as hot as he can bear it, kept there for half an hour; and, when thus thrown into the most profuse perspiration, is suddenly plunged into cold water. In such cases, the powerful revulsion produced by the application of the wet sheet after the manner of the hydropathists would doubtless often be of essential service.

Great success appears to have followed the use of sulphurous baths. In the course of five years, one practitioner, M. Baudelocque, treated 27 cases by them, 25 of which were cured.

Electricity has been extensively and beneficially employed in chorea, by Drs. Addison and Golding Bird. Of thirty-six cases, in which it was used by the latter, twenty-nine are said to have been cured, and five relieved; one experienced no benefit, and one left under alarm at the remedy. In the majority of cases, the only medicines prescribed along with it were occasional mild cathartics, which—as well as other agents—had been previously given without advantage. Electricity was applied, in the form of sparks taken in the course of the spinal column

every other day, for about five minutes each time, or until a papular eruption appeared, which is often excited by the remedy in this form. No good result accrued from the transmission of electric shocks along the affected limbs; on the contrary, in every instance, the involuntary movements were increased, often to an alarming extent; and if employed when the patient was convalescent, it invariably aggravated every symptom, and frequently rendered the disease as severe as when he was first placed under treatment.

It would appear, from some observations lately published, that confining the affected limb in splints has had a beneficial agency, by directing the patient's attention to the deranged muscles. Properly adapted gymnastic exercises are likewise valuable adjuvants: they engage the attention, strengthen the action of the nervous system, and are, in every way, advantageous.

The diet—it need scarcely be said—should be plain and digestible; but where tonics are demanded, it obviously need not be greatly restricted as to quantity. It may consist of food that is nutritious; but all excitement both mental and corporeal should be avoided.

Where chorea is complicated—as it occasionally is—with disease of the heart or pericardium, or of the spinal cord, or its membranes, the treatment will have to be modified according to the character of the complication.

Dr. Watson has lately drawn attention to a class of convulsive spasmodic affections, which, he considers, resemble epilepsy on the one hand, and chorea on the other, or rather form a link of alliance between the two, and which are especially remarkable, owing to their being propagated by the sympathy of imitation. Of this we have examples in the *convulsionnaires* of all times: and in certain religious sects, which exist in this and other countries. Their history is curious as exhibiting the singular influence of the *moral* on the *physique*, but is of no interest to the therapist.

Not long ago, the author was consulted by a young medical friend in regard to the nature of a singular convulsive affection, which, he affirmed, prevailed in a part of the country with which he was familiar. The author has not seen any case of it; and he therefore gives the history, as it was kindly furnished him by Dr. Waters.

“Franklin, New York, 5th May, 1841.

“Prof. R. DUNGLISON.

“Dear Sir:—In obedience to your kind request I improve my first leisure since my return home, in giving you, in as lucid and satisfactory a manner as possible, an account of a singular affection somewhat common in the southeastern portion of this state, and known among the common people as ‘*the magrums*.’ Whence the name originated I know not, but if it be a corruption of the word ‘*megrims*,’ I am at a loss to understand how it ever came to be applied by the vulgar to the disease of which I am speaking, and which has nothing in it analogous to ordinary hemicrania or megrim. It consists essen-

tially in a spasmodic action of all, or nearly all, the voluntary muscles of the system—of involuntary and more or less irregular motions of the extremities, face and trunk. In these involuntary movements the upper part of the air passages occasionally participate, as is witnessed by the ‘*clucking*’ sound in the neighbourhood of the glottis, and in a manifest impediment to the powers of speech. The expression of countenance, and general appearance of the patient, are very much such as are described as characteristic of chorea.

“The disease is markedly hereditary, and is most common among the lower classes, though cases of it are not unfrequently found among those, who by industry and temperance have raised themselves to a respectable rank in society. These involuntary movements of the face, neck, extremities and body, cease entirely during sleep.

“This singular disease rarely—very rarely indeed—makes its appearance before adult life; and attacks after forty-five years of age are also very rare. When once it has appeared, however, it clings to its suffering victim with unrelenting tenacity till death comes to his relief. It very rarely or never ceases while life lasts.

“The first indications of its approach are spasmodic twitchings of the extremities—generally of the fingers—which gradually extend and involve all the voluntary muscles. This derangement of muscular action is by no means uniform: in some it exists to a greater, in others to a less extent, but in all cases it gradually induces a state of more or less perfect dementia.

“This disease, in its origin and progress, is not, as far as I have been able to discover, attended with any unusual pain in the head. In some of the worst cases I ever saw, I could not discover, that there had ever been any unusual sensation in the cerebral region.

“When speaking of the manifestly hereditary nature of the disease, I should perhaps have remarked, that I have never known a case of it to occur in a patient, one or both of whose ancestors were not, within the third generation at farthest, the subjects of this distressing malady.

“The appetite is commonly good, and the process of digestion seems generally to proceed with considerable regularity. The bowels are however usually somewhat costive, though I have known cases in which daily evacuations were not unfrequent. Of the general appearance of these evacuations I am not informed.

“The pulse does not deviate materially from the healthy standard, and consequently presents nothing remarkable.

“It may not be amiss to state, that the last patient who came under my observation, and who had the reputation of being an honest man, informed me, that, in his own case, this involuntary action of the muscles ceased under the influence of all instrumental music, *except that of the common ‘Jew’s-Harp.’* I very much regret it was not in my power to test the truth of this statement.

“I also regret, that it is not now in my power to give any information as to the condition of the catamenia in those labouring under it. I hope to be able to institute a course of inquiry upon this subject during the ensuing summer or fall.

“ I have thus, dear sir, given you a general—though perhaps not very lucid and satisfactory—account of this singular malady. I may observe that, although the descriptions of chorea in the books apply very well to this disease, it nevertheless seems to differ in several respects from ordinary chorea. 1st. It rarely occurs before adult age. 2d. It never ceases spontaneously. 3d. When fully developed it wants the paroxysmal character.

“ After all, may not this disease be a peculiar modification of chorea?—is not its pathology in the main the same, and would it not probably be found to yield to the treatment most suited to chorea, if to any?

“ I am, dear sir, respectfully,

“ Your obt<sup>t</sup> serv<sup>t</sup>,

“ C. O. WATERS.”

In an inaugural dissertation, presented before the Faculty of Jefferson Medical College of Philadelphia by Dr. Charles R. Gorman, of Luzerne County, Pennsylvania, the writer states, that this affection prevails also in other portions of the country. According to him, it seems to be circumscribed by neighbourhood boundaries, and to be confined to sections of country, the inhabitants of which are intimately connected in their social or business relations. “ May not this circumstance”—he asks, “ sanction the inference, that the cause exists in the influence the *moral* is known to exert over the *physique*—the sympathy of imitation?”

Under the head of *Chronic chorea*, Dr. Watson has placed those *partial choreas*, *Tics*, *Spasmodic tics*, *Nervous tics*; Fr. *Tics nerveux*; commonly seen in nervous persons, which consist in the most irregular and fantastic movements of certain muscles,—at first, perhaps, the result of bad habits, but which are subsequently executed independently of all volition. Thus, children occasionally get into the habit of rapidly winking both eyes, or of moving the nose, or angles of the mouth; and, after a while, the parts are so much accustomed to the action, that they may remain permanently, and be the source of great annoyance in after life. Some of the greatest ornaments of their race, have been disfigured by these awkward habits or tricks contracted in early life. In other cases, however, they arise in consequence of some morbid condition of the nerves, and in spite of every effort on the part of the individual. “ I am acquainted,” says the writer just cited, “ with one gentleman, who is perpetually wrinkling his nose; and he has assured me, that he was subject, when young, to an involuntary shake of the head; but a blister having been once applied to the throat for some disorder in the air-passages, the shaking of the head was thereby rendered painful and difficult, and the movement there ceased; but, (as he expressed it,) it broke out in his nose, where it triumphs to this day.” There is no system of medication, which is productive of any advantage in those cases. If mental attention and revulsion are unable to rectify the evil, no therapeutical agent will be of any avail. The affection is, however, totally devoid of danger.



## IX. TREMOR.

SYNON. Synclonus tremor, Tromus, Trepidatio; Fr. Tremblement; Ger. Zittern.

This affection often bears considerable similarity to chorea: it consists in slight involuntary contractions of the voluntary muscles, or of part of them; the convulsive movements not interfering with the movements regulated by volition, except by deranging or embarrassing them, or by rendering them uncertain. The upper parts of the body are more frequently affected than the lower, owing, perhaps, to the support afforded to the latter by surrounding objects, whilst the upper extremities and the head owe their steadiness altogether to the contraction of appropriate muscles. The precise nature of this disease of the nervous system is unknown; but it would appear to be dependent upon a badly regulated or intermittent supply of the nervous agency, to which the term *locomotive influx* has been given by some physiologists.

As the symptoms vary somewhat according to the cause, it may be well, in the first place, to refer to the

**Causes.**—Any violent mental agitation, as excessive anger or fear, induces a general tremor or trembling, which is more marked, perhaps, in the lower than in the upper limbs, but passes away with the cause that induced it. All profuse evacuations, and every debilitating agency must be equally regarded amongst the causes, as well as the excitement induced by excess in the venereal act, and by the alternate stimulation and depression occasioned by too liberal indulgence in alcoholic potations. It is also observed in the course of long protracted febrile diseases, especially in those of the typhoid and typhous kinds, and in fact towards the termination of all acute and chronic diseases, in which the powers of the nervous system yield. In some cases, the convulsions are marked, giving rise to twitchings, termed *Subsultus tendinum*, or to irregular motions, as if the individual were picking the bedclothes, a state which has been termed *Carphologia*. Tremors take place, likewise, in the progress of age, hence termed "senile:" and they are observable in muscles, whose nervous energy has been worn out or impaired by continued exertion.

One form of the disease is induced by mercurial vapours, and is hence met with in gilders of metals, looking-glass manufacturers, makers of barometers and thermometers, &c.; and it is mentioned as remarkable, that when mercury is received into the system in this form, it does not occasion salivation; whilst if it be conveyed by friction, or through the stomach, salivation is induced but no tremors;—at least, such, M. Andral observes, is a general rule; but farther observation appears to be needed before we can consider it established. At times, too, the preparations of lead have appeared to induce it.

Abuse of opium and tobacco produces the same effect as alcoholic liquors. Nervous vacillation is perceptible under an over-dose of either, as in cases of inebriation; but it is transient. Under habitual use, however, it becomes permanent. Some of the worst cases of

nervous trembling, which the author has seen, were caused by the immoderate use of tobacco; but in all cases, the nervous system recovered its power under the gradual diminution and entire discontinuance of the cause.

**Diagnosis.**—The symptoms require no description. It has been already remarked, that the tremors may be general or partial. In the aged, they are commonly confined to the head; but the muscles of the upper extremities especially may participate. At times, they are suspended during sleep. In mercurial tremors, the affection is most commonly limited to the limbs; so that uncertainty in the gait, embarrassed movements, and impaired powers of prehension, are the main symptoms; and these are, occasionally, accompanied by sudden involuntary jerkings or twitchings of the muscles, and cramps.

The duration of the disease must vary. Often, it passes away with the removal of the cause; but the tremors of old age, depending, as they do, on impairment of innervation connected with the period of life, and hence being a form of *Shaking palsy*, *Paralysis agitans*, *P. tremula*, *Synclonus ballismus*; Ger. *Zitterlähmung*, *Schüttellähmung*, may be deemed incurable. M. Rufz has given a singular case of this affection, of which the following were the prominent phenomena. A boy, aged 10, was received into the *Hôpital des Enfants*, Paris, having a constant trembling of the left side, which was more marked in the upper than in the lower extremity. He could, however, walk, run, lay hold of objects, and keep them in his hand. The tremors had continued for two years, and had come on without any adequate cause. His health, indeed, had always been good. Many physicians had treated him for chorea, and after having been subjected to varied treatment, he left the hospital, without having experienced any amendment. M. Rufz considers, that there is no analogy between this affection and chorea: but a recent author, M. H. Bell, thinks they are strikingly similar. M. Bell gives, also, two cases of an analogous nature. One of these occurred at the *Hôpital la Charité*, in Paris, in a man, fifty years of age, who, whenever he was desirous of remaining erect, without walking, was seized with tremors, or rather with an alternate movement of flexion and extension of the knees; and this continued as long as he remained at rest, but as soon as he began to walk, the trembling disappeared, and the limbs had all their usual power and agility. The trembling ceased, also, when he was in bed. The second patient was a man forty years of age, healthy and vigorous, who had a strong oscillatory movement of the left arm, whenever he was desirous of holding himself still; but when he used his hand, even in the most delicate movements,—such as holding a glassful of water—the trembling ceased, and not a drop of liquid was spilled. M. Bell considers, that these were cases rather of disorder of the muscular movements resembling chorea, than of incomplete paralysis. The true view, perhaps, is to regard them as combined. The author, on Nov. 20, 1841, exhibited to his class, at the Philadelphia Hospital, a case in which the distribution of the locomotive influx, under the influence of volition, was very imperfectly executed. The

patient showed many of the phenomena of paraplegia; and, when he was seated, was unable to rise; the moment, however, he was placed upon his feet, he walked, but with a gait characteristic of the paraplegic.

**Treatment.**—In many of the cases above mentioned, the tremors cease with the removal of the cause. In others, however, it persists. The disease in protracted cases, consisting, as has been seen, in loss of nervous power—and probably in the medulla spinalis, whence the motor nerves that pass to the affected muscles arise—blisters or excitant liniments<sup>a</sup> have been applied to the region of the spine.

<sup>a</sup> R.—Linim. saponis f3x.

Tinct. cantharid. f3ij.—M.

Or, R.—Liq. ammon. fort. f3ss.

Spirit. rorismarin.

To be used twice a day over the spine.

— camphor. aa f3vj.—M.

*Nux vomica*, or *strychnia*, both of which are known to exert an excitant influence on the spinal marrow, may be administered as elsewhere advised, (p. 167.) *Strychnia* has been strongly recommended in the shaking or trembling action of the muscles, which is produced by habitual intoxication. In cases of tremors, induced by narcotics,—amongst which we may place alcohol in all its varieties,—when not of too long standing, good effect has resulted from new nervous impressions; and the report of MM. Andry and Thouret, commissioners of the *Société Royale de Médecine*, of Paris, has shown that, in this way, the magnet was beneficial. With the same view, electricity and galvanism might be employed. In cases of tremors produced by mercury, electro-puncture has been advised, and it might unquestionably be serviceable. In these last cases, the patient must be removed from the causes that induced them. Warm bathing, vapour baths, and brisk cathartics, so as to occasion a revellent effect on the intestinal canal, with a bland, unirritating diet, have been found to constitute the most successful management. Sulphurous baths may, likewise, be recommended, as well as sulphur internally, (*Lactis sulphuris*, gr. xv. three times a day.)

Sulphurous baths have been found advantageous by their excitant agency in purely nervous tremors.

#### X. NERVOUS APOPLEXY.

SYNON. *Apoplexia nervosa seu spasmodica*, A. simplex; *Fr.* Apoplexie nerveuse; *Ger.* Nervöser Schlagfluss, Krampfhafter Schlagfluss.

With the English and American writers, the term *Apoplexy* is appropriated to a set of morbid phenomena, characterized mainly by loss of sensation, motion, and mental and moral manifestations, with stertorous breathing. These phenomena may, however, be induced by various pathological conditions. It has already been seen, that they may be caused by effusion of blood into the encephalon; by simple hyperæmia, and by effusion of serum,—constituting *sanguineous apoplexy*, *congestive apoplexy*, and *serous apoplexy*. There is one other form, however, which, in the existing state of knowledge, may, perhaps, be ranged under the neuroses, as it has been done by some pathologists. In this variety, no lesion whatever may be per-

ceptible on dissection, although the patient may have died under all the phenomena that are characteristic of apoplexy. To it the term *nervous apoplexy* has been given by many; by others, it has been called *simple apoplexy*. Confusion has been introduced into medical nomenclature by the extended acceptance that has been given to the word *apoplexy*. Thus, instead of its being appropriated to affections characterized by disorder of the phenomena of sensibility and motility above mentioned, many of the French authors—and others have followed the example—have employed it synonymously with cerebral hemorrhage; and it has even been extended metaphorically to designate other hemorrhages that occur into the substance of organs; hence we speak of *pulmonary apoplexy, cutaneous apoplexy, &c.*

**Diagnosis.**—The symptoms that belong to this form of apoplexy do not differ materially from those of serous apoplexy. Generally, it would seem to be preceded by nervous symptoms,—tremors, convulsive movements, depravation of the sense of vision and audition, &c., more or less confusion, stupor, vertigo or delirium. The attack is almost always sudden, and immediately succeeding some powerful mental emotion. The ordinary symptoms are those described under Hemorrhage in the Encephalon: there is total or partial loss of sensibility and motion, with stertorous breathing. Careful observation may, however, show, that along with incomplete loss of sensation, there are slight convulsive movements. The loss of power, or the paralysis, is commonly alike on both sides; or, if it appear to be greater for a time on one side, it may subsequently be more marked on the other; and, almost always, there is a greater change in the symptoms than occurs when they are caused by cerebral hemorrhage, or by any form of pressure exerted on the encephalon.

Should the symptoms of apoplexy have occurred many times, have continued for only a short period, and left behind them no evidence of compression, it has been inferred that the affection is the nervous form. But this might be a very erroneous inference, inasmuch as all the functional phenomena of apoplexy—as has been shown elsewhere—may be developed under a hyperæmic condition of the vessels of the encephalon.

The duration of the disease is commonly short; often, it occurs and disappears almost instantaneously. Its termination is, indeed, generally sudden; and, in some cases, it is accompanied by a copious discharge of limpid urine, and of flatus from both extremities of the digestive tube, yawning and stretching, and other functional phenomena, which mark the decline of hysteric attacks. The following case, which occurred in the author's Clinic at the Philadelphia Hospital, is elucidative of this and of other neurotic cases. The patient had been for some time under the care of Dr. Pennock, the author's predecessor in the wards, and the note of the case, which afforded an interesting occasion for comments to the medical class, was furnished by Dr. Ludlow, one of the resident physicians. C. M., aged 35, a weaver by trade, entered the hospital on the 13th of September, 1841, labouring under a slight attack of intermittent fever, and complaining likewise of pain referred to the base of the cerebrum. After remaining in the

wards for some time, the paroxysms of fever were checked, but the encephalic symptoms augmented; and he was now affected with inability to govern the motion of his limbs. At this time also, he was attacked with slight tetanoid spasms, and with loss of power over the right side. He was cupped freely over the back part of the head; blisters were applied to the nape of the neck, and mercurials were given in small doses. Under this treatment he improved, and finally recovered so far as to possess the complete use of his limbs. A tonic system of medication was prescribed, and convalescence appeared to be established. On the 18th of October, however, symptoms supervened, which appeared to threaten a second attack, or rather a relapse into his former condition. There was more marked stupor; great flushing of the cheeks; twitching of the left side of the face; inability to protrude the tongue; anxious countenance; feeble pulse, and general torpor of the whole system. A large blister was now directed to the nape of the neck, with counter-irritants to the extremities; and mercurials were again given internally. Before, however, the blister had time to act, the patient was seized with convulsions. The face was livid; the eyes were rolled back and upwards towards the forehead; there was great twitching of the muscles of the right side, and violent tetanoid spasm of the left side, bending the body in a semi-ovoid form; the arms were perfectly rigid; the thumbs turned inwards; the respiration was stertorous, and a bloody fluid exuded from his mouth and nostrils. The body was cold, and the pulse scarcely to be felt at the wrist. A large blister was again applied as high up on the neck as possible, and another down the whole course of the spine. Mustard pediluvia, and sinapisms to the inside of the legs and thighs were directed, and the body was rubbed with a stimulating liniment. Hot brandy toddy was given freely by the mouth, and camphor both by the mouth and rectum; the blistered surfaces were dressed with sulphate of quinia, and mercurials were administered as before. Under this treatment, the patient gradually improved, and no unpleasant symptoms occurred to arrest the cure. He was attacked, indeed, with slight dysentery, but this was speedily removed; and when he was exhibited by the author to the clinical class, he was entirely free from all encephalo-spinal symptoms, with the exception of a sensation of slight coldness in the arm that had been paralysed.

**Causes.**—The causes of nervous apoplexy are, generally, powerful mental emotions; hence it occurs especially in hysterical and hypochondriacal persons. It is said to be more frequent in men than in women, and in the more impressible inhabitants of cities than in those of the country. The condition of the encephalon, in these cases, has been compared to that which exists in concussion of the brain. The pulse, instead of being slow but regular, and of unimpaired strength, is feeble, irregular, and fluttering; and a general paleness of the surface indicates a degree of failure of the circulation far beyond what is observed in cases of compression.

Powerful mental emotions may destroy instantaneously; but—as has been suggested—a long-continued recurrence of slighter causes weakening the powers of the encephalon may, at the same time, gra-

dually impair those of the heart and blood-vessels, in the same way that an infusion of tobacco applied to the brain impairs its energy. In like manner, it can be understood, that long-protracted disease may lay the foundation for it.

**Treatment.**—The management of a case of nervous apoplexy must be regulated greatly by the nature of the attendant symptoms. If—as is generally, perhaps, the case—the powers are below the proper standard, great caution must be had in having recourse to depletion. The cause of the disease is generally of such a character as can scarcely fail to be aggravated by loss of blood. There may be cases, however, in which the application of cups, combining, as it does, capillary depletion and revulsion, may be of essential service. In all cases, it will be advisable to prescribe revellents, as blisters to the nape of the neck and to the spine; terebinthinate injections to the rectum, and sinapised pediluvia, or sinapisms to the lower extremities. Excitants—as ether, camphor, &c.—may be given internally, but care must be taken that they are properly adapted to the case, otherwise they might be productive of much disadvantage; external excitants are, however, liable to no objection.

After the symptoms have passed away, the influences, that gave occasion to them, must be sedulously avoided. Occasionally these would seem to have supervened periodically; in such case, the sulphate of quinia may be administered with benefit.

#### XI. CATALEPSY.

SYNON. Catalepsia, Catalepsis, Carus catalepsia, Catoche, Catochus, Catocha Galeni, Morbus attonitus Celsi, Hysteria Cataleptica, Congelatio, Prehensio, Apprehensio, Stupor vigilans; *Fr.* Catalepsie; *Ger.* Katalepsie, Starrsucht.

This affection of the nervous centres consists in a tonic contraction of some of the muscles, so that the limbs retain the position they had prior to the attack, or in which they were placed during it. Along with this, the intellectual faculties, and all the functions of sensibility, are more or less completely suspended.

**Diagnosis.**—The symptoms of catalepsy are very complicated. As in the neuroses already described, there may be prodromic or premonitory signs, such as palpitation, yawning and stretching, cramps, and cephalalgia; but, at other times, the patient is suddenly attacked with general or partial rigidity of the muscles, and total, or almost total, loss of consciousness,—the limbs retaining the position they were in prior to the paroxysm; the eyes are fixed, and generally directed upwards and forwards; the respiration may remain free, unless the disease attacks the respiratory muscles, when it becomes difficult, and almost imperceptible. The same may be said of the circulation; the pulse may continue full and free; but, at times, it, also, can scarcely be perceived. Generally, the limbs continue flexible, but stiff when we attempt to move them; at other times, they are entirely rigid: commonly, no matter what may be the position in which we place them, they retain it. With these symptoms there are, occasionally, clonic convulsions. The face is usually flushed, and the surface warm. In rare cases, the intelligence is not disturbed; but, in the majority of instances, no recollection exists of what took place during the pa-

roxysm. The general sensibility is lost, so that the surface may be pinched or pricked without pain being experienced; the eye is not found to contract on the approach of light; and the hearing is totally suspended.

The duration of the attack is not always the same. At times, it is transient; at others, it continues for hours and even days, and is, doubtless, one of the forms of *trance* of which we read in authors. Cases, indeed, are on record, in which cataleptics have been considered dead, and interred alive.

**Causes.**—The predisposing cause is, doubtless, great impressibility of the nervous system; and hence the affection is observed in females who are subject to hysteria, of which, indeed, catalepsy can only be regarded as a variety. In a lady, whose family are predisposed to insanity, and who is herself liable to hysteria, the author has seen well-marked catalepsy developed under the action of powerful mental emotions—which must be esteemed the ordinary exciting causes, as well as anything that powerfully affects the nervous system, and produces irregularity in the distribution of the nervous influence. Hence, catalepsy is one of the conditions developed under the operations of the animal magnetizer. The author had under his care in the Philadelphia Hospital a female, who had recovered from delirium tremens, whose nervous system—as in all such cases—was left inordinately impressible, and who could be thrown into a state of catalepsy by the fixed look of the resident physician, when not continued for more than two minutes. In this state, the limbs, if placed in any position, would remain immovable for a long period, even if the bedclothes were placed upon them. In fact, she presented all the symptoms described above as appertaining to catalepsy. This case will be referred to hereafter.

**Pathological Characters.**—As the disease is extremely rare, and when it does occur, commonly terminates in health, no opportunities have arisen for observing the appearances of the nervous centres. Nor is it probable, that anything morbid could be detected. It is one of those neuroses, like those already described, and those to be described hereafter, that are not indicated by any visible evidences, and exhibit their functional character by the rapidity with which they pass off, leaving the patient in health.

**Treatment.**—This must be the same as in hysteria, of which—it has been remarked—catalepsy can only be regarded as a variety. In the cases of catalepsy, which we now notice more frequently under the manipulations of the animal magnetizer, the disease requires no management. It continues for a shorter or longer period, after which the patient awakes entirely restored, or affected with more or less dulness of the sensorial faculties, which gradually passes off.

A morbid condition of the nervous centres is sometimes met with, which has been regarded as a minor form of catalepsy. This is the *Ephialtes vigilantium*, *Incubus vigilantium*, *Ephialtes hypochondriaca*, or *Daymare* of writers, so called in consequence of its resemblance to *Nightmare*. In this affection, the patient is incapable of moving or

speaking, but is conscious of every thing that transpires around him. It is rarely met with, and only, perhaps, in highly impressible persons. It appears, indeed, chiefly in hysterical females.

## XII. HYSTERIA.

SYNON. *Sypspasia Hysteria, Malum hystericum, Passio hystericæ, Morbus hystericus, Affectio hystericæ, Hysterismus, Suffocatio uterina, Asthma uteri, Hysterics; Fr. Hystérie, Mal de Mère, Passion hystérique, Suffocation utérine, Étranglement, Épilepsie utérine, Vapeurs, Maux de Nerfs; Ger. Hysterie, Mutterkrankheit, Mutterplage, Mutterbeschwerden.*

This disease received the name from its supposed origin in, or connexion with, the uterus, (from ὕστερα, “the uterus;”) but this notion has been long exploded, although the condition of that organ may be concerned in its causation. Many cases occur in females, in which there is no reason to presume any such connexion, whilst examples of well-marked hysteria are unquestionably seen in men.

**Diagnosis.**—Hysteria is most protean in its character. There is scarcely, indeed, an affection which it may not simulate. Still, there are a few symptoms, which may be regarded as pathognomonic. They, who are liable to it, are endowed with nervous systems which are unusually impressible, and are observed to be seized with paroxysms of laughing or crying, often in alternation, and without any manifest cause. They are subject, also, to great variety in their spirits, being unduly dejected or elevated; and, at times, to dyspeptic symptoms, accompanied by more or less hypochondriasis. These symptoms, with the sensation of a ball ascending from the stomach to the throat, and inducing a feeling of impending suffocation—hence called *globus hystericus*; palpitation, and occasionally dyspnœa; nervous headache; constipation, and a copious secretion of limpid urine, may be regarded as amongst the ordinary characteristics of hysteria. These may occur suddenly, and in union, so as to characterize a mild hysteric paroxysm; or they may be variously combined, so as to leave little if any doubt as to the nature of the disease. In other cases, however, these symptoms may be mere premonitions of convulsions, which are at times of an extremely violent character. In the case of a lady attacked with hysteria under this form, and whose muscles are by no means powerfully developed, the greatest efforts are required to retain her on the bed; the trunk of the body being twisted in all directions; the limbs moved forcibly, so as to overpower all control, and the hands so strongly clenched, as to resist every attempt at straightening the fingers. In this case, the paroxysms are occasionally those of catalepsy, with which—as before remarked—hysteria has a most striking analogy. As the patient recovers from this severe attack, the fits of laughing and crying often recur, with indomitable hiccough. Frequently, the intelligence is preserved during the paroxysm, which indicates a wide distinction between hysteria and epilepsy; but, at other times, consciousness is entirely lost, as in catalepsy; or the intellectual and moral faculties are grossly perverted, so that obscenities of action and expression are indulged in, wholly inconsistent with the character and habits of the patient. In one of those severe paroxysms, the



patient may continue for a longer or shorter period: usually, she recovers after a few hours' rest, and is restored to her former condition, with the exception of the fatigue necessarily resulting from continued exertion, and generally some degree of lethargy, which gradually passes off. Mr. Tate considers a peculiar gnawing pain,—usually situate immediately below the left breast, in a hollow formed between the cartilages of the fifth, sixth and seventh ribs, and generally so circumscribed that it may be covered by a shilling—to be diagnostic of hysteria; and a later writer, Dr. Morton, of Philadelphia, affirms, that, since his attention has been drawn to the subject, he has so repeatedly noticed the pain under the left breast, as to believe it to be characteristic of hysteric affections. Mr. Tate considers the pain to be seated in the intercostal nerve.

To the young practitioner, an attack of severe hysteria appears most formidable; yet the prognosis is always favourable. It is extremely rare for pure hysteria to terminate fatally, and when it does so, it is owing to superinduced mischief in some important organ. Like the neuroses in general, it may be converted into some other disease of the class; and, when such conversion does occur, it is commonly into epilepsy; so that a question of differential diagnosis may arise, as to whether the affection be really hysteria or epilepsy: the history of the case; the absence of former attacks of epilepsy; with the previous presence of the signs that mark the hysteric habit will generally elucidate the matter. The absence of consciousness, in an attack of epilepsy, has been regarded as an important diagnostic difference, but such absence may occur in hysteria and hysteroid affections.

The recurrence of the paroxysms in one predisposed to them, is generally very irregular; but on the application of any of the occasional causes, they may be developed. Usually, too, under the evolutions of the system that take place in the progress of life, the tendency to the disease is lost, and we rarely observe it after thirty or forty years of age. When long protracted, the impressibility of the nervous system is often so great, that the slightest impression made on the nerves of sensation will develop a paroxysm, or induce violent palpitation and syncope.

**Causes.**—It has been before remarked, that an unusual impressibility of the nervous system constitutes a predisposition to hysteria. This may be either natural or acquired; and it may exist in the male as well as in the female, although, for obvious reasons, it is more rarely met with in the former than in the latter. Any morbid or other cause, consequently, that develops this impressibility, may be reckoned amongst the excitant causes of hysteria. At the periods of menstruation, and of the commencement and cessation of the catamenial secretion, the system of the female is observed to be unusually impressible; at such times, a slighter exciting cause will develop the disease than at others, and when once induced, like the other neuroses, it more readily recurs.

Amongst the exciting causes, sudden and powerful mental emotions are the most common; but any source of irritation, especially when

conjoined with debility, may occasion it. It may be produced, likewise, by disordered states of important organs; by irritations in the digestive tube; and, doubtless, in the uterus as in other organs, whence irradiations proceed to the great nervous centres, from which they are reflected over the organism.

**Pathological Characters.**—These—as in the case of the other neuroses—are not distinctive: few persons die in a paroxysm of hysteria, and, when they do, the appearances are those of concomitant or consequent lesions, rather than such as throw any light on the nature of the disease.

It has been already remarked, that hysteria is probably a disease of the nervous system. At the present day, indeed, it is scarcely necessary to say, that it cannot be an affection of the uterus;—the whole train of symptoms implicating the functions of sensation, volition, and the mental and moral manifestations sufficiently show, that the seat of hysteria must be in the nervous system, and that there is no necessary connexion between hysteria and the uterus. The organization and habits of the female render her, by her greater impressibility, more liable to attacks of hysteria, and the condition of the uterus in health and disease may, doubtless, be concerned in the causation, but in this way only. Hysterical symptoms occur both before the development of the uterus at puberty, and after the cessation of the catamenia; and, as was before observed, well marked hysteria is met with in men, of which the author has had a striking example lately. Such cases, it is true, are rare; but a single one is sufficient to show that there can be no necessary connexion of the kind mentioned; yet a writer, already cited, M. Tate, asserts his conviction, that the protean forms of hysteria are referable to irritation of the spinal marrow, especially of its dorsal portion, originally induced by a disordered condition of the uterine function; and he affirms, that hysterical affections “never do occur without a combined error in the nervous system and the uterine functions.” The vague notions of that writer on the subject of “spinal irritation,”—as it has been termed—and of others, who have embraced his views, have passed, or are passing away; and the inaccuracy of the assertion, just cited from him, is so evident as to need no comment. In the very irritable state of the nervous centres which characterizes hysteria, it can readily be comprehended, how irritative irradiations may be conveyed to the cerebro-spinal axis, whence they may be reflected, by the efferent nerves, to various parts of the economy; although the precise change in the nervous centres, which is present in hysteria, may entirely escape our cognizance.

**Treatment.**—The treatment of hysteria may be divided into—*First*, that which is proper in the paroxysm; and—*Secondly*, that which is demanded in the intervals, for the purpose of modifying the predisposition, and removing the occasional causes.

In the paroxysm, the first object with the practitioner is to remove the patient into a cool airy apartment, and to loosen all ligatures about the person. When the paroxysm is very severe, it is impossible to administer any remedies; but cold water dashed on the face, or the cold *douche* to the head, applied by pouring water, from a height,

from the spout of a teapot, or other appropriate vessel, will often arouse the nervous system to a different action, and curtail the paroxysm. With the same view, preparations of ammonia may be held to the nose.

In milder cases, and in the more severe, after the violent symptoms have passed away, stimulants belonging to the class of reputed antispasmodics may be used with advantage. Of these, the spirit of hartshorn, or the aromatic spirit of ammonia, one or other of which is generally at hand, may be given in a little water, as soon as the patient can be made to swallow. Before, too, even medicines can be given by the mouth, a stimulating glyster of turpentine will succeed in cutting short the fit.

R.—Olei terebinthinæ ℥ss.  
Ovi unius vitellum.  
Tere simul et adde,  
Aquæ tepidæ ℥xj.—M.

Assafœtida glysters have been recommended in such cases, but they act only like any other stimulating enemata,—not by virtue of any direct antispasmodic property, which they possess.

R.—Assafœtid. ℥ij.  
Aquæ Oss.—M.

The author has stated, elsewhere, his conviction as to the non-existence of any direct antispasmodics (*Gen. Therap. and Mat. Med.* 3d edit. p. 389, Phil. 1846): it is only, indeed, in the disease now under consideration, that reputed antispasmodics are much used at this day. Hysteria, it has been seen, is a cerebro-spinal affection, and the symptoms that indicate it are numerous and varied. There is scarcely a nerve, or a ramification, however small, which does not seem to participate occasionally in the pathological condition. In these cases, the object of the practitioner must be, to divert elsewhere the erethism present in one part of the nervous system, by impressions made upon some other. Hence, he administers substances, that are nauseous and stimulant, so as to powerfully impress the gustatory nerves, as well as those of the supradiaphragmatic portion of the digestive tube, and of the stomach: and, with this view, he prescribes assafœtida,<sup>a</sup> castor, or valerian;<sup>b</sup> the spiritus ammoniæ fœtidus; the spiritus ammoniæ aromaticus;<sup>c</sup> creasote,<sup>d</sup> and other reputed antispasmodics during the paroxysm; and in the interval adapts his remedial agents to the indications that may present themselves.

<sup>a</sup> R.—Mist. assafœtid. f ℥iv.  
Tinct. ——— f ℥ij.—M.

Dose, one or two tablespoonfuls, often repeated.

<sup>b</sup> R.—Tinct. castorei, seu  
—— valerian. f ℥ij.  
Mist. camphor. f ℥vj.—M.

Dose, a tablespoonful.

<sup>c</sup> R.—Sp. aromat., seu  
—— ammon. fœtid. f ℥ij.  
Mist. camphor. f ℥vj.—M.

Dose, a tablespoonful.

<sup>d</sup> R.—Creasot. ℥i.—ij.  
Mist. camphor. f ℥iss.—M.

This draught to be taken occasionally.

When signs of plethora exist during the fit, blood may have to be taken from the general system; but this is rarely needed.

The treatment, during the interval, must be regulated by the condition of the patient. If polyæmia exist, it must be combated by blood-

letting, cathartics, low diet and regular exercise; but, usually, remedies of an opposite character are demanded. If torpor of the intestines be present, a brisk cathartic may be prescribed, which may act most beneficially, both as an evacuant and a revellent. Where the habit is languid, the various chalybeate preparations recommended in the treatment of the neuroses already described may be advised; but advantage is rather to be derived from hygienic than from therapeutical agents. With this view, attention must be paid to the condition of the digestive function: the bowels must be kept in a regular state; free exercise be taken in the open air; and cold and tepid bathing be recommended; with a total avoidance of all sudden and violent emotions if practicable; and a distraction from all those causes, that are known to excite a paroxysm. Where the disease has appeared to depend "upon simple atony of the generative system, or of the nervous and generative systems combined," Dr. Nardo found the administration of ergot followed by the rapid disappearance of the disease. His practice consists in giving about a scruple of the powder, mixed with sugar, in divided doses, each day,—intermitting the dose every third or fourth day. Many cases are reported by him to show the efficacy of the practice,—the hysteria, and the irregularity or absence of the menstrual secretion, being removed at the same time.

### XIII. TETANUS.

SYNON. *Entasia tetanus*; *Fr.* Tétanos; *Ger.* Starrkrampf, Todtenkrampf, Todtenstarre, Steifsucht.

This disease consists in a permanent contraction of all the muscles, or merely of some, without alternations of relaxation. It is variously designated according to the seat of the contraction:—if, for example, it affect the levator muscles of the lower jaw, it is termed *Trismus*, *Entasia trismus*, *Locked jaw*; *Ger.* *Kinnbackenkrampf*: if the extensors of the body, so that the body is bent backwards, it is termed *Opisthotonos*, *Tetanus dorsalis*, *T. Posticus*, *T. Posterganeus*, *Raptus posterganeus*; *Ger.* *Rückenkrampf*, *Rückwärtsdreher*: if the body be thrown forward, *Emprosthotonos*, *Tetanus anticus*; *Ger.* *Vorkrampf*, *Vorwärtsdreher*; and if to one side, *Pleurosthotonos*, *Tetanus lateralis*; *Ger.* *Seitenkrampf*, *Seitendreher*.

**Diagnosis.**—It but rarely happens, that there are many premonitions of an attack of tetanus. In the traumatic form, the patient at times, gives evidence of great impressibility of the nervous system, with convulsive and other irregular conditions of the muscles of the neck and jaws. Generally, the attack commences with trismus,—in other words, with permanent contraction of the masseter and temporal muscles, to such a degree, that the lower jaw cannot be depressed by any force that can be employed. At times, the tonic spasm extends no farther, until the expiration of one or more days, when the muscles of the neck become implicated, and contract in the same manner, and ultimately those of the trunk and limbs, when the tetanus becomes general. Commonly, tetanus assumes the form of opisthotonos, but it may be any of the varieties mentioned above.

During the violence of the disease, the body resists every effort to

move it; and the muscles are indurated and drawn into knots; but after an uncertain time, the spasm becomes somewhat diminished, and the muscles so far relaxed, as to allow of some motion, and the prehension of liquids; but this remission is usually but a prelude to a more severe spasm. When death takes place, which is the common result, it appears to be induced by asphyxia, owing to the mechanical phenomena of respiration becoming arrested; the animal functions remain nearly unaffected, so that the patient may retain his senses almost to the very last. The circulation, if not hurried at the first, becomes so subsequently.

In the most fortunate cases, the disease is confined mainly to the muscles of the jaws, or is trismus only; but it commonly extends, in the mode above described; and, at times, the spasms are so severe, that the unfortunate sufferer touches the soil only by his heels and occiput. Generally, too, the muscles of the abdomen and the diaphragm are affected with irregular spasms, which are the source of much suffering. Usually, the intellect remains clear; and the pulse, in the early stages, is but little affected: during the spasms, however, it becomes accelerated; and, towards the fatal termination, as in other diseases, weak and frequent. It has been thought, by Dr. Parry, that the patient was safe, if the pulse did not exceed 110 on the fourth or fifth day, but this is a very insufficient ground for prognosis. Occasionally, the skin feels hot; and one of the greatest elevations of temperature, noted in the human body, was in a case observed by M. Prévost, of Geneva. The thermometer rose to nearly 111° Fahrenheit. It would appear, indeed, from experiments on the lower animals, and pathological cases in man, that lesions of the upper part of the spinal marrow give occasion, at times, to an extraordinary development of heat. In the case of a man at St. George's Hospital, London, labouring under a lesion of the cervical vertebræ, the temperature was marked by Sir Benjamin Brodie at 111°. (See the author's *Human Physiology*, 6th edit. ii. 213, Philada. 1846.)

As to the duration of the disease, it sometimes terminates in a few hours; at others, not for several days, and even months. The average duration has been considered by M. Andral to be four or five days. Of 58 cases, that terminated successfully, 8, according to Mr. Curling, recovered in a week; 3, in ten days; 4, in a fortnight; 4, in three weeks; 15, in a month; 4, in five weeks; 8, in six weeks; 3, in eight weeks; 3, in two months; and 2, in three months.

The prognosis, especially in the traumatic form, is extremely unfavourable. An eminent observer, Sir James Macgregor, saw but few recoveries in the campaigns of the British army in Spain and Portugal; and another, Dr. O'Beirne, did not witness a single recovery in 200 cases. Trismus nascentium is described to be uniformly fatal, and the recoveries are doubtless few. The circumstances, which give occasion to a more favourable prognosis, are—a long interval between the application of the cause and the accession of the disease; the slow progress of the tetanus, and the patient surviving beyond the fourth day; the spasms not being general, frequent or severe; the respiration easy, and the pulse natural.

**Causes.**—There is doubtless a predisposition in the nervous system, which gives occasion to tetanus on the application of an adequate exciting cause. The disease is much more common in some regions and localities than in others. In the West Indies, and in Scandinavia, *Trismus nascentium*, *T. neonatorum*; Ger. *Kinnbackenkrampf der Neugeborenen*, *Wangenscheurchen*, *Mundkrampfe*, *Mundsperr*, is a very frequent and fatal disease; and at the Havana, it is said by Don Ramon de la Sagra to destroy a large proportion of infants during the first fortnight. It has been suspected, that want of cleanliness and ventilation have as much to do with this, as “the changes of temperature, that occur there so suddenly and so frequently;” and in support of this view, M. Andral remarks, that at Wilna, in Russia, where the climate is so different, the same affection is found among the Jewish infants, who are remarkable for the same want of cleanliness, and for being crowded together into a small space. It is common, too, in the Western Isles of Scotland, and is singularly frequent in the Vestmann Isles, on the southern coast of Iceland. On these desolate rocks, the population of which does not exceed 160 souls, it was found, that in a period of 25 years, 186 infants perished of that disease under the age of 21 days; and of these, 161 died between the fourth and tenth days after birth; 75 on the eighth day. The condition of life of these poor people is singularly destitute,—fish, and the eggs of sea-fowl, being their sole aliment; yet it is said not to be so different from that of the Icelanders of the main land as to explain the frequency of this fatal disorder amongst them; and hence it has been suggested by Dr. H. Holland, that some constitutional and hereditary causes are concerned. It is more than probable, that the influence of locality is exerted in the causation, but how the organism is modified by these causes we know not. It is said by Dr. V. N. Wooten of Lowndesboro’, Alabama, to be fearfully common in the cotton plantations there;—at times, being of such frequent occurrence as to present the appearance of an epidemic; but he has never seen a white child affected with it. Dr. Wooten has not met with a case of decided trismus nascentium that did not prove fatal, notwithstanding every plan of treatment which books, or the most anxious study on his part, could suggest.

It has been believed by some, as by Messrs. Colles, Busch, and Levy, that the trismus of the new-born is owing to inflammation of the umbilical arteries. The first symptoms were usually observed by Dr. Wooten about the time the umbilical cord came away; from which he supposed, that it was the effect of awkwardness in dressing the navel by the ignorant midwives, who usually attend on the plantations; but careful investigation led to nothing conclusive on this point.

As regards traumatic tetanus or that caused by a wound, observation has shown, that elevation of temperature predisposes the nervous system to it; and hence we can understand, why the disease should be more common in torrid regions, and in temperate climates during the warmer seasons. In a system thus predisposed to tetanus, many causes may excite it into action. Of these, the most common are wounds, especially the punctured, the lacerated, and the gunshot, in

parts like the extremities, which are liberally supplied with nerves, and it has been observed, in military service, that tetanus has more frequently supervened on such injuries, when the vicissitudes of the atmosphere had been considerable. In habits predisposed to the disease, any injury, however trifling, may induce it. It has followed the extraction of a tooth, and the prick of a needle. Traumatic tetanus is, perhaps, the most unmanageable variety. In regard to the period at which it follows the infliction of the injury, nothing positive can be stated. In 128 observed cases, according to Mr. Curling, tetanus appeared from the 4th to the 14th day in 81. One case is recorded by Dr. Robison, in which it did not supervene until ten weeks had elapsed. Another writer, M. Fournier-Pescay, has seen it occur after a month. An army surgeon of large experience, never witnessed a longer interval than twenty-two days: other distinguished surgeons, Sir B. Brodie and Baron Larrey, have not seen it after the 17th day, and Baron Larrey thought, that the French soldiers, during the campaign in Egypt, were safe after the 16th day. Another exciting cause is cold, which gives rise to the *Tetanus algidus*. The first case of tetanus, which the author saw, was caused in this manner. A young man, when in a profuse perspiration, went into a river to bathe. He was immediately struck with tetanus, from which, however, he recovered under the treatment described hereafter. It is affirmed, likewise, that pathological conditions of various organs,—as inflammation and irritation of the alimentary canal, and intense mental emotion,—have given rise to it; and it is well known, that we possess certain therapeutical agents,—as nux vomica, strychnia, and brucia,—which, in an adequate dose, occasion tetanic convulsions. At other times, again, the disease appears to occur without any appreciable cause.

**Pathological Characters.**—The organic cause, or the precise condition of the nervous system, which gives occasion to tetanus, escapes us, in the existing state of knowledge. The brain has commonly been found, after death, without lesion, and, often, the spinal marrow also; and when morbid appearances have been seen in the latter, they have not been always the same. At times, inflammation of the meninges of the spinal marrow, or of the spinal marrow itself, or of some of the nerves connected immediately with it, or of the neurilemma of certain nerves, has been observed; at other times, effusion of blood or serum within the spinal sheath; or the formation of false membranes; or softening, or induration of the spinal marrow, or of the anterior column,—the one destined for motion; and, at others, again, when no evident lesion has been perceptible in the spinal marrow, the semilunar ganglions have been unusually red. It would certainly appear, that a modified condition of the spinal marrow must exist, in order that tetanus should be developed. In the enumeration of the exciting causes, it has been shown, that injuries or irritations, at a distance from the medulla, may develope tetanus *eccentrically*, but there can be no doubt, that the medulla spinalis must, under such irritative irradiations, be thrown into a pathological state, in order that tetanus may ensue. In other cases, it has been conceived, tetanus may arise from

a morbid condition, commencing in the medulla or *centrically*; and this is probable; although certainly, in the majority of cases, that fall under observation—those of the traumatic variety—the irritation is first induced in the terminal extremities of the nerves, and is thence extended to the spinal marrow. Whether this condition of the spinal marrow be one of inflammation or merely of irritation has been a question, which is yet unsettled. In the greater number of observed cases, hyperæmia of the medulla or its membranes has been found on dissection, but it is not always easy to decide, whether such appearances were the cause of the tetanus, or supervened during the excessive crethism of the nervous system, which characterizes the disease. A recent writer, Dr. Gerhard, of Philadelphia, considers the alterations of tissues found on the examination of those who have died of tetanus to be purely accidental; and he states, that he has examined with great attention the brain and spinal marrow in ten or twelve cases, and could not detect any lesion, which seemed to have the slightest influence upon the production of the symptoms.

The intimate nature of tetanus is unknown to us.

**Treatment.**—This has been generally unsuccessful, and has varied essentially according to the views entertained of the nature of the malady. They, who have looked upon it to be inflammatory, have advised bloodletting carried to a great extent, and cases are recorded of cure after this treatment; but it has often failed. A writer on the subject, M. Lepelletier du Mans, has detailed the case of a man from whom he took 12 pounds of blood at six times, and who recovered. Another observer, M. Martin has reported several cases of cure thus obtained. He placed the patient in a warm-bath, and kept him in it several hours, drawing three ounces of blood every hour; and, more recently, an eminent surgeon, M. Lisfranc, detailed to the Académie de Médecine, of Paris, the case of a man who was cured by bleeding him eight times in nineteen hours, to about four cups each time; and during the same period, applying 742 leeches along the spine, and 50 to the epigastrium. M. Andral—after referring to those examples—remarks, that if he had a case of tetanus to treat, he would employ the antiphlogistic regimen in all its rigour; and that he would apply the leeches, not only to the spine, but to the nape of the neck, and the jaws, and around the wound, if any existed.

In a disease, characterized by such exalted action of the nervous system, narcotics are at once suggested; and most practitioners, perhaps, rest their hopes on large doses of some article of the class. There is none so well adapted to fulfil all the indications as opium and its various preparations. Opium may be given in the form of soft pill, in the dose of two grains every hour or two, until relief is obtained. When affected with tetanus, the nervous system resists powerfully the action of narcotics, so that enormous doses may be administered without the supervention of narcosis. It is affirmed, by M. Bégin, that a practitioner administered, in ten days, four pounds, seven ounces, and six drachms of laudanum, and six ounces, four drachms, and forty-five grains of solid opium; and Mr. Abernethy found thirty grains of undissolved opium in the stomach of an indivi-



dual who died of tetanus. Twenty grains of opium, according to Dr. J. H. Bennet, have been given every three hours, for several days. At times, camphor, musk, and the various reputed antispasmodics, are associated with the opium, but there is no marked benefit from the association. By some, morphia has been administered endermically, and advantage is said to have accrued from it in this form; but the same result would, doubtless, have been induced, had it been given by the stomach. It may be used, however, endermically, when the trismus is so violent as to preclude the use of all internal remedies. A small blister may be formed over the mastoid process, or on the top of the sternum,—these places being selected owing to their not being subject to attrition,—and three or four grains of the acetate, sulphate, or muriate of morphia, may be sprinkled on the surface from which the cuticle has been removed,—the aspersion being repeated several times a day, if requisite. Dr. Hutchinson, of Nottingham, England, has published two cases, in which belladonna, in large doses, was beneficial. Five grains were successfully administered in the first case; and, in the second, the dose was gradually increased, until ultimately four grains were given, and repeated every two hours. Nothing else was administered except cathartics occasionally, which the obstinate state of constipation required to be of a drastic character.

The resinous extract of *Cannabis Indica*, *Indian Hemp* or *Gunjah*, has been recommended in the traumatic form of the disease, by Dr. O'Shaughnessy, and of late several cases of marked benefit from its use have been recorded. It was given, at first, in doses of two grains every third hour, and afterwards, of three grains every second hour, until the usual intoxicating effects were induced; when the spasms were, in some cases, mitigated, and in others wholly removed. (See the author's *New Remedies*, 5th edit. p. 152. Philad. 1846.) In the same form of the disease, large doses of tincture of aconite, prepared according to the formula of Dr. Fleming (*Aconit. rad. sicc. ʒxvj., Alcohol. f ʒxxiv.*), have been advised. Dr. Fleming would not exceed a second dose of five minims, two hours after the first; but in traumatic tetanus it has been carried much farther. In a case, successfully treated by Mr. Page, eighteen or nineteen minims were given in eight hours; the second day, the dose was increased to thirty-two minims in 14 hours; the third day to twenty-five minims in 7 hours; and the fourth day to twenty minims in two hours. It is important, whenever this potent remedy is given, to watch the case attentively, and diminish the dose according to circumstances.

Tobacco has been highly extolled by many therapeutists, and Dr. J. H. Bennet is disposed to regard it as the most efficient remedy of the class. It may be given in the form of infusion internally or of enema sufficiently often to keep the system under its influence, care being taken that it is not pushed too far.

R.—Fol. tabaci ʒj.  
Aquæ ferventis Oss.—M.

Cases of traumatic tetanus successfully treated by tobacco have been recently reported by Mr. J. D. Pridie, and by Mr. B. Travers, junr., of St. Thomas's Hospital.

Dr. M. Hall, after laying down what he regards the first indication of treatment in traumatic tetanus, viz.: to divide the injured nerves, observes that the second is "to subdue the spasmodic affections by such remedies as the hydrocyanic acid." We are satisfied that narcotics are more powerful agents. M. Andral, indeed, says, that the hydrocyanic acid has never succeeded; but it is asserted that it was prescribed with advantage in a case of traumatic tetanus, in the dose of from two to twelve drops, after opium had been given in vain.<sup>2</sup>

<sup>2</sup> R.—Acid. hydrocyan. gtt. ij. vel iij.  
Syrup fʒj.  
Aqueæ destillat. fʒxi.—M. et fiat haustus.

Revellents have in some instances succeeded. In the case of tetanus algidus, which fell under the author's observation, and to which allusion has been made already, the patient, who lived in the country, was taken, in the violence of the opisthotonos, to a brook, which ran by the house, and the cold affusion was liberally administered. Narcotics were likewise given, and under the combination he got well. The powerful revulsion induced by cold water, applied in the manner of the so-called "hydropathists," proved successful in one case treated by Mr. Preshaw. The patient was enveloped in a cold wet sheet, over which were placed three or four good blankets: he was kept in this condition for an hour, by which time the temperature of the sheet was about 100°. The coverings were then removed, and he was plunged into a cold bath; he was now rubbed quite dry, and enveloped again in a blanket for six hours, and the cold bath was repeated. This course was repeated from time to time, with the addition of the cold *douche*.

In tetanus algidus, especially, we are satisfied, that not only the cold *douche* but the cold bath, and even the hot air or vapour bath may be beneficially employed to break in upon the morbid concentration of organic actions in the nervous centres. It is proper, however, to remark, that cases are recorded, in which the patient died immediately on being plunged into the cold bath; the remedy, therefore, should be adapted to the particular case, taking care that the shock occasioned is not too powerful. Revellents have likewise been directed to the intestines and to the cutaneous surface. Cathartics may be employed with two views: *first*, to evacuate the contents of the bowels; for in this, as well as in the nenroses already described, sources of irritation, scybala, &c., may be present in the intestinal tube; and, *secondly*, to induce revulsion. With this view, any of the ordinary cathartics may be given; or stimulating turpentine or other enemata may be thrown into the bowels. The cutaneous revellents have consisted of blisters, or ammoniated lotions, applied over the region of the spine; but the results have not been striking; while the irritation, induced by them, has seemed to be detrimental. It has been affirmed, indeed, by Dr. Hartshorne, of Philadelphia, and others, that benefit has resulted from the application of potassa along the spine, so as to inflame the surface. Dr. Hartshorne's mode of application is to tie a piece of sponge to a fork, and after dipping it in a solution of the caustic in water, in the proportion of a drachm to an ounce, to apply it rapidly along the spine twice or thrice, if the patient can bear it.

In this very anomalous disease, remedies of a character opposite to

those mentioned thus far have been advised. Wine and bark have been given freely, and occasionally with success. In one successful case, according to Dr. Brigham, Dr. Hosack administered three gallons of wine in the course of three days. He was led to regard the disease as one of debility; and was informed by General Moreau, that lock-jaw was of rare occurrence in an army, when it first took the field, but that it was produced by the slightest wounds when the soldiers had become fatigued and debilitated by long marches and frequent battles. Two cases have been published in which marked benefit, and, in one, complete success followed the use of alcohol in intoxicating quantities. In a case, related by Mr. Stapleton, the tetanic convulsions were entirely suspended, but the patient died. In another, reported to the Royal Medico-Chirurgical Society, of London, by Dr. Wilson, the patient appeared to be cured by brandy, given in enormous quantities,—opium being at the same time avoided. In eight days, he took two gallons of brandy, in addition to wine, &c.

These are the main agents on which reliance has to be placed; but mercury pushed so as to excite salivation; antimonials, administered so as to keep up nausea; tincture of cantharides, phosphorus, arsenic, oil of turpentine, and various other agents, have been prescribed; and it is said by MM. Cruveilhier and Andral, that where the tetanus existed in the pectoral muscles, advantage has been derived by causing the patient to breathe in a cadenced manner (*en lui faisant cadencer la respiration.*)

In the tetanus of warm climates, the internal use of the vinous tincture of the seeds of *colchicum autumnale*—a powerful acro-narcotic—has been extolled. Dr. Smith, of Port-au-Prince, begins with half a drachm, and increases the dose every half hour, repeating it until emesis or catharsis has been produced. The remedy is then discontinued.

As soon as the singular effects, which the inhalation of ether is capable of producing on the nervous system, were appreciated, its use in this severe nervous affection was at once suggested; and cases of traumatic tetanus have been recorded, in which it appeared to be productive of most decided benefit,—to have been, indeed, to all appearance, the means of cure. In two other cases, however, one of which occurred to Dr. Ranking, and the other to M. Roux, of Paris, it appeared to be prejudicial. In Dr. Ranking's case, instead of alleviating the spasms, "the act of inhaling most distinctly induced and aggravated the paroxysms," and in that of M. Roux, death was, in his opinion, evidently hastened by the remedy.

In cases of traumatic tetanus, the division of the nerves presumed to be injured, and even amputation, has been proposed; but there are few who vindicate the propriety of the latter measure. As a prophylactic, it is, of course, quite inadmissible. In all cases, it will, doubtless, be proper to freely cut any nerve that may be partially divided; but it is probable, that much advantage could not arise from either of the methods above proposed, inasmuch as although the wound may have been the cause of the disease, the disease itself is in those cases a peculiar affection of the nervous centres, which would still persist,

after the division of the nerves, or the formidable operation of removing the limb.

As for the diet,—where the state of the spasm will admit of any being taken, it may consist of readily digestible and nutritious aliment,—as milk with the farinacea; but, at times, it is impracticable for days to administer anything by the mouth. Under these circumstances, liquid food may be introduced into the stomach through a tube passed by the nostrils; or it may be thrown into the colon and rectum, where chylous matter may be separated from it in quantity sufficient to be inservient in part to the wants of the system.

#### XIV. RABIES.

**SYNON.** Rabies canina, Hydrophobia, Hygrophobia, Cynolyssa, Lyssa, L. felina et canina, Pantophobia, Erethismus hydrophobia, Clonus hydrophobia, Aerophobia, Phobopsia; *Fr.* Hydrophobie, Rage; *Ger.* Wasserscheu, Hundswuth.

Hydrophobia literally signifies “a dread of water;” but this is not characteristic of the disease generally understood by the term. Not only is there a dread of water in rabies, but convulsions are induced by the sight of polished bodies, as of mirrors. Moreover, hydrophobia is occasionally met with in hysteria; and in many febrile and other affections accompanied with excessive nervous irregularity and impressibility. Still, the dread of liquids is observed so generally in rabies, that the term hydrophobia has been retained by most writers. The disease is extremely like tetanus, and, consequently, its consideration falls appropriately in this place.

**Diagnosis.**—The symptoms of rabies have been classed under two periods; the *first* comprising those that are observed before the occurrence of convulsions; and the *second* those that characterize the disease. The symptoms of the *first* period occur at an indefinite interval from the infliction of the bite—at times, a fortnight, a month, or six weeks, and even later. Uneasiness is felt in the wound, which is occasionally re-opened; but, at other times, no local inconvenience whatever is experienced. The patient complains of dulness, and sense of heaviness in the head; is out of spirits; his nights are restless, and disturbed by terrific dreams; the appetite fails; and there is an indescribable expression of dread in the countenance. These, are, however, mere prodromic symptoms, which may occur where much dread is experienced without the existence of hydrophobia; and this is strikingly exhibited in one variety of monomania—the *hydrophobic* of certain writers. On the invasion of the second stage, the symptoms cease to be equivocal. The patient is attacked with a kind of convulsive shuddering, and soon afterwards with true convulsions, especially of the muscles concerned in deglutition and respiration. The fifth nerve in the face and in the fauces, and the pneumogastric nerve in the larynx, appear to be inordinately impressible. The impression made upon these nerves, according to one pathologist, Dr. M. Hall, is reflected upon the muscles of the pharynx and larynx, and the resulting sense of dysphagia or of dyspnœa is overwhelming. The convulsions recur in paroxysms more and more frequently, and with augmented intensity, until they ultimately destroy the sufferer;

and the sight of liquids, or of any polished surface; or a flash of light, or the least noise, or a puff of air blown on the face, will often bring on an attack of the most horrible spasm of the laryngeal and pharyngeal muscles. When the patient endeavours to resist or overcome this dread of liquids, the mental and corporeal effort is signally distressing and horrific. Every muscle of the face is thrown into violent agitation, and those of the throat and trunk contract so forcibly and convulsively, as to threaten suffocation. These attacks or paroxysms last, at first, for a few seconds only; but, subsequently, they become more violent and prolonged, and the intervals shorter and more disturbed. In the generality of instances, the intellect is unaffected; and at times the patient warns the bystanders to keep away, lest he should bite or otherwise injure them. Ultimately, all is agitation; the face is red; the eyes are sparkling; the pulse is small and contracted; and the convulsions, which now invade all the muscles, are horrible to behold. The expression of countenance is a mixture of agony and terror; a frothy and viscid saliva accumulates in, and flows from, the mouth; and, at length, the muscles of organic life participate in the mischief, so that there is constant vomiting, with hicough; a cold clammy sweat breaks out from every part of the cutaneous surface; the powers of life fail; the pulse becomes small and intermittent; the respiration is accomplished with difficulty; and the patient sinks in the midst of the most awful sufferings.

The duration of the disease varies. Sometimes it proves fatal in 24 hours; at others, not until the expiration of six or seven days. The common duration has been estimated at from 50 to 60 hours. In the year 1838, according to the Third Report of the Registrar-General, (Lond. 1841,) 16 males and 8 females, died in England and Wales of hydrophobia; in 1839, 11 males and 4 females.

**Causes.**—The disease in animals may be either *spontaneous* or *communicated*. In man, it probably never arises spontaneously; and perhaps in no animal does it originate in this manner, except in those of the dog, and cat kind. It has been affirmed, that true hydrophobia may be induced by powerful impressions made on the nervous system; and there is no doubt, that in hysteria or monomania, thus occasioned, many of the signs of rabies may be present—such as excessive impressibility of the nerves of deglutition and respiration, at the sight of liquids, mirrors, &c.: but, although these neuroses strongly resemble hydrophobia, they differ from it in the circumstance, that the lesion of the nervous centres is to a slight degree only, and ends in restoration to health; whilst in the rabies, induced by the bite of an animal affected with the same disease, the individual almost always dies in a short time. It has been argued, also, that in cases of the bite of a rabid animal, followed by the symptoms already described as characterizing hydrophobia, the affection is altogether imaginary, and therefore, a form of hysteria, or a state of the nervous system resembling it; but this view is overthrown by the fact, that it occurs in children, in whom the influence of the imagination cannot be presumed; and we know, that it is communicated from one animal to another. The author recollects a case, indeed, in which all the

symptoms of hydrophobia were experienced by a highly impressible divine, after a bite received from an animal, enraged but not rabid. He had, in his alarm, perused different treatises on the disease, and wrought himself into the belief that he experienced the various feelings therein described. This was a case of *hydrophobic monomania*; from which he gradually recovered. A similar case was related to Mr. Dendy by Dr. Uwins. An intellectual young gentleman, from some morbid association with the idea of an elephant, was affected with terrific spasms whenever the word was named, or even written before him; and to such a pitch was this carried, that *elephant paper*, if he knew it was such, produced the same effect!

Some, again, have supposed, that the bite of a healthy animal can induce the disease, and that it really varies little—if at all—from traumatic tetanus. The diseases, doubtless, resemble each other, and are congenerous; but they are not identical; and we cannot question the fact, that a rabid animal is capable of communicating a morbid poison to man by inoculation, which induces a peculiar disease to which we give the name rabies or hydrophobia. This morbid poison is commonly—it has been imagined, exclusively—communicated through a wound, or a surface from which the epidermis has been removed, but when placed in contact with a mucous membrane, whose epithelium is entire, it may—it is believed by M. Andral—communicate the disease. The application to the nose of a handkerchief, impregnated with the saliva of a rabid animal, according to M. Chaussier, has been known to cause it in man.

It has been generally perhaps conceived, that the saliva, modified in its characters, is the agent by which the disease is induced in man: but others have believed, that the lyssic or hydrophobic virus is some secretion mixed with the saliva, and applied with it to the wounded part. This view was considered to be confirmed by the investigations of M. Marochetti—a Russian physician—who affirmed, that from the third to the ninth day of the disease, whitish pustules are perceptible near the frænum linguæ, which open spontaneously about the thirteenth day. The views of Marochetti have not been confirmed by other pathologists, but M. Gendrin affirms, from the results of the dissection of numerous persons who have died of hydrophobia, that the only disorganization he has met with is a considerable development, mostly inflammatory, of the mucous crypts at the base of the tongue, pharynx, and upper aperture of the larynx.

Analogy would seem to show, that the morbid poison is some distinct secretion from the blood. In hydrophobia, as in smallpox, the blood of a rabid animal has been injected into the vessels of a sound animal, yet no effect has been induced. It is affirmed, that a person became hydrophobic from touching the skin of a rabid animal; yet persons constantly do the same thing with thorough impunity. M. Andral, on dissecting an animal that had died from hydrophobia, ran a splinter into his finger, yet no bad results followed. Cases have been published by Mr. H. S. Steele, in which lambs became rabid, merely from sucking ewes, which had been bitten by a mad dog; for the lambs were removed a month before the ewes became

affected, and not the slightest scar was perceptible on any of them. Still, the lambs may have been bitten by the dog; for a number of sheep were attacked by him, several of which died hydrophobic; and, perhaps, in the present state of our ignorance on this matter, it is presumable, that a secretion takes place from some portion of the pulmonary or digestive mucous membrane, which, like the matter of the smallpox pustule in cases of variola, is the morbid poison.

In cases of the bites of animals decidedly rabid, hydrophobia does not always result. M. Wagner affirms, that he has witnessed many instances of entire impunity under such circumstances, although the remedies employed were merely such as were suggested by superstition; whence he is led to infer, that in man a predisposition to hydrophobia very rarely exists.

It has been an interesting question, whether a person labouring under hydrophobia can communicate the disease to his fellow-man. The feeling—the apprehension—is, that he certainly can; but we want facts on this subject. A professional friend of the author, when attending a patient labouring under hydrophobia, heedlessly put his finger on the patient's tongue, to examine the condition of the throat, and it was not until afterwards, that he recollected that the skin was abraded. He applied to the author under great anxiety; but had previously excised and cauterized the part. On this head, the author could find nothing satisfactory in books; but in the absence of the necessary information, he comforted him with the assurance, that if man could communicate the disease to his fellow, such cases could not fail to be on record. No hydrophobia supervened. It is proper to add, that evidence has been adduced by M. Breschet, that rabies may be transmitted from man to the dog, by inoculating a dog with the saliva of a hydrophobic patient. Thirty-eight hours after such an inoculation, the dog became furiously rabid, and bit several dogs, which also became successively rabid. Some of the dogs drank water with avidity. The period of latency of the poison is stated to have been twenty or thirty days. How it is, that the hydrophobic virus, thus placed eccentrically, affects the great nervous centres, is most mysterious. Often, the disease does not break out until the wound has wholly healed, and the recollection of the occurrence been entirely banished.

**Pathological Characters.**—As in tetanus, the morbid appearances in hydrophobia are not characteristic; they, indeed, strikingly resemble those observed in all deaths from convulsions. The meninges of the brain and spinal marrow have been found injected, and the neurine itself softened; but, in most cases, these appearances have been wanting; and when they have been present may have arisen secondarily. M. Gendrin affirms, that he has never seen the least trace of inflammation, or of any lesion whatever, in the encephalo-rachidian, or in the ganglionic, nerves. It was before remarked, that the only disorganization he had noticed was a considerable development, mostly inflammatory, of the mucous crypts at the base of the tongue, the pharynx, and the upper opening of the larynx. The salivary glands have been observed red and swollen; and, in one case, the epithelium

of the œsophagus was eroded; the stomach, too, has exhibited signs of hyperæmia, and the follicles of the intestines have been greatly developed. The air-passages have been seen filled with a frothy fluid; and congestion of blood has been observed in the branches of the pulmonary artery, and in the right side of the heart, as in cases of death by asphyxia.

**Treatment.**—There is no disease in the whole catalogue which we attack more hopelessly than this. The most important part of the treatment is the prophylactic. Whenever the part can be freely excised, this must be done. No matter how late may be the period after the infliction of the injury, provided the symptoms of hydrophobia have not appeared, this course has been recommended; although it is very doubtful, whether excision can be of any advantage after many days have elapsed, and time has been allowed for the production of the morbid condition of the nervous system requisite for its development. Still, it will be erring on the safe side to practise it; and should pain and swelling commence, at any time, in the wound, it may be warrantable to have recourse to excision. A case is recorded by Dr. Rush, in which it was practised thirty-one days after the bite, even when the hydrophobic symptoms had appeared, and the patient recovered. Where excision cannot be easily performed, the red-hot iron, heated to whiteness, should be applied so as to disorganize the whole wounded surface; the potential cautery should only be used in cases where the actual cautery is inadmissible. If the potential cautery be employed, either potassa fusa, chloride of zinc, or butter of antimony<sup>a</sup> may be chosen.

<sup>a</sup> R.—Zinci chlorid. part. i.  
Farinæ tritici part. iss.  
Antimon. chlorid. part. ss.  
Aquæ font. q. s. ut fiat pasta.

To be applied by means of a moistened hair pencil.

Before cauterizing the part, if called early, the wound may be enlarged, well washed by the application of a continued stream of water upon it,—as recommended by Dr. Haygarth, and by Dr. Mease, of Philadelphia,—be scarified, and have cupping glasses applied over it, so as to extract as far as possible the virus. It has been suggested, also, that a tight ligature should be applied a short distance above the laceration. Mr. Youatt, who destroys the part with lunar caustic, has operated in upwards of 400 cases of bites by dogs distinctly rabid, and not one had taken the disease.

By several of the Italian and other physicians—the *aqua chlorini* has been used both internally and externally as a preventive. (*New Remedies*, 5th edit. p. 173: Philada. 1846.) Much fallacy may arise, however, in regard to the agency of reputed preventives, as all who are bitten by a rabid animal are not attacked with hydrophobia; hence it is that we have so many preventives of this as well as of other diseases. When the disease has once become developed, and the true hydrophobic symptoms have appeared, no remedial treatment can be depended upon.

When M. Marochetti's views in regard to the sublingual pustules were first promulgated, hopes—slight, however—were entertained,



that by the cauterization of the pustules as they appeared, and by washing them, as he advised, with the *decoctum genista*, the disease might really be removed; but subsequent observation proved the fallacy of those hopes.

All the remedies enumerated under tetanus, and many more, have been tried, but the same unsuccessful results have usually followed all. In India, according to Messrs. Timon and Shoolbred, a happy termination ensued in two cases from excessive bleeding, as recommended by Boerhaave, but in others in which it was pushed to the same degree, it failed; and it has even been doubted by Messrs. Troiliet, S. Cooper, and J. L. Bardsley, whether Shoolbred's cases were hydrophobia. The injection of a large quantity of warm water into the veins was recommended in one case, the patient appeared soothed, but the paroxysms recurred, and ultimately proved fatal. Opium has been associated with it, but the results were not modified. It has likewise been suggested, by Dr. Booth, that a solution of morphia should be injected into the cephalic vein,<sup>2</sup> and that the injection should be repeated at intervals of ten minutes, if no effect be observed; but this has not been more happy than many other suggestions. As in tetanus, the quantity of opium administered has been enormous.

<sup>2</sup> R.—Liq. morphiæ acet. ℞. xxiv.  
Aquæ destillat. f ʒij.—M.

In a fatal case, a distinguished London practitioner, Dr. Babington, besides administering half an ounce of laudanum in injection, gave 180 grains of opium internally in eleven hours. In one case, the disease, according to Dr. A. T. Thomson, appeared to be mitigated by the free use of hydrocyanic acid; and as death results from asphyxia, the propriety of tracheotomy has been suggested by Mr. Mayo. Dr. M. Hall remarks, that if a case were committed to his charge, he would combine these two modes of treatment. The experiment may be made, but the termination—it is to be feared—will not be changed.

Dr. Mease has strongly urged the application of a solution of potassa, so as to inflame the surface along the spine, as advised by Dr. Hartsborne in tetanus.

It is a question of great interest to decide at what period after a person has been bitten, he may be considered free from all danger. Unhappily, the evidence we have on this subject does not admit of this being fixed. Dr. J. H. Bennet has collected the testimony of various observers, which sufficiently exhibits the want of regularity in this matter. Of 131 recorded cases, according to Mr. S. Cooper, none became indisposed before the 11th day after the bite, and only 3 before the 18th. Of 15 other cases, given by M. Troiliet, 7 were attacked between the 14th and 30th days; 5 between the 30th and 40th; 2 a little after that period; and 1 after 14 weeks. Cases, however, are recorded, in which the disease broke out in two or three days, and others, in which it did not supervene until the expiration of several months—nine, eleven, twelve, fifteen, nineteen months, and even of years; but it may well be questioned, whether the disease was fairly referable to the assigned cause in these last cases. It is impossible, however, to lay down any precise period of safety; and when it is

fixed by one at 17 months; by another at 19; and by another at two years, the estimates must be regarded as the mere opinions of their authors. This much, however, may be said:—it is exceedingly rare for any case of rabies to appear in an individual three months after he has been bitten.

To avoid the severe spasms, which are induced by the sight of anything bright or glistening, it has been advised, that the sufferer should be kept in almost perfect darkness; and it has been suggested by M. Allier, that at the commencement of an attack, compression of both carotids may be used with advantage.

Before leaving this disease, it may be well to make a few remarks in regard to the indications of rabies in the dog, in which—as well as in the lower animals—there is no *hydrophobia*—no dread of water. The dog, though unable to swallow, flies to it with eagerness, and all other rabid quadrupeds, with perhaps an occasional exception in the horse, are said by Mr. Youatt to drink with ease, and increased avidity. A modern observer, M. Wagner, who has had great opportunities for noticing animals in this state, lays down the following rules for guidance:—The moment a dog evinces any traces of illness, it is no longer to be trusted; and it would be well to lock it up, or fasten it by a stout chain. But when it begins to gnaw wood, to show a dull eye, to snap at animals with which it had become familiarized, and to bark hoarsely; when it attempts to run away or to break its chain; eats and drinks with a snapping gesture; at intervals, appears lively, and then again sneaks sulkily to its kennel; when it disregards its master's call, and, contrary to its former habits, growls and snarls at well-known persons, the animal ought to be despatched, for there can no longer remain a doubt of its being rabid.

## XV. DELIRIUM.

SYNON. Deliratio; *Fr.* Délire; *Ger.* Irreden, Phantasiren.

By this is meant a wandering or straying of the mind from the rules of reason,—a kind of incoherence so often associated with fever, that the term *delirium cum febre* has been usually assigned to it,—to distinguish it from the *delirium sine febre* or mental alienation. Still, ordinary delirium may occur without any manifestation of fever.

**Causes.**—Delirium may be *eccentric* or *centric*,—that is, dependent upon causes seated out of the encephalon; or upon such as act immediately upon it. In highly impressible persons, the slightest pain or irritation in any part may induce it by causing modifications in the encephalic function, which are totally inappreciable. This is a case of the eccentric kind. At other times, it is induced by causes that act immediately on the brain or its meninges, as has been pointed out under Encephalitis, and Hyperæmia of the Encephalon. But it may, also, occur in a very opposite condition of the brain, where there is defective excitement. Hence, it is not an uncommon effect of exhaustion from excessive loss of blood, as well as in fevers, in which the nervous function has been depressed by long-continued overaction,—

as in typhoid and typhous fevers,—those which are classed by some writers as the *ataxo-dynamic*. Another form of delirium—mentioned under the next head—supervenes on the abstraction of special excitants to which the economy has been accustomed. It may likewise be caused by substances, which act upon the brain, directly or indirectly,—as alcoholic drinks and narcotics. The drunkenness, induced by the former, is a species of delirium, and is, doubtless, partly occasioned by the action of the alcohol upon the nerves of the stomach, whence it is propagated to the encephalon; and, partly by its entering the veins of the stomach, and proceeding with the blood to the encephalon. Certain it is, that in these cases the odour of alcohol has been manifest in the ventricles of the brain, and signs of hyperæmia have been perceptible in both the vessels of the encephalon and its meninges. Experiments, too, have been made on animals, which show, that when alcohol has been introduced into the stomach, it may be found in the blood, and in the brain a few moments afterwards; and all the symptoms of intoxication can be induced by introducing alcohol into the veins of an animal.

**Pathological Characters.**—The portion of the brain implicated in delirium, has not been positively determined. As the cortical part has been supposed, by many physiologists, to be the seat of intelligence, delirium has been referred thither also; but we are still in want of information on this matter. In many cases, signs of encephalitis or of hyperæmia are manifest on dissection, but in others, there is evidence of neither one nor the other; and even when hyperæmia or signs of inflammation exist, it may be a question, whether they were subsequent, or antecedent to the aberration; but this question will fall again under notice, when treating of Mental Alienation.

**Treatment.**—In the form of delirium, which is produced *eccentrically*, regard must be had to the removal of the cause, and to the modification of the encephalic faculties, if the derangement can be appreciated. The use of antiphlogistics, provided indications for them exist, and of full doses of narcotics, if the delirium be excited by intense pain, or be of a nervous character, are indispensable. The local mischief must always be removed, or, if this cannot be accomplished, be masked. The delirium, under such circumstances, will generally yield spontaneously.

In cases of injuries followed by delirium, but unaccompanied by febrile excitement, which have been termed "*nervous delirium*," antiphlogistics fail to be indicated; whilst opiates and narcotics in general are most beneficial. Where it is induced by alcoholic drinks or by opiates, it passes off spontaneously in the majority of cases. Emetics may be administered if required. They act beneficially by evacuating the fluids, which may still be in the stomach, and, by their revellent operation, are well adapted for arousing the individual, if he be disposed to fall into a state of coma or stupor. The liquor ammoniæ acetatis, in the dose of half a fluidounce or an ounce, has at times, a speedy effect. Bloodletting may be needed, as well as sinapised pediluvia, and the cold *douche* to the head, with copious draughts of water. In animals, intoxicated by alcoholic fluids, the drunkenness, according to M. Andral, has ceased on the free exhibition of cold water.

Nearly allied to delirium, and to ordinary dreaming, is the affection commonly called *Nightmare*, *Ephialtes*, *Ephialtes nocturnus*, *Incubus*, *Epilepsia nocturna*, *Oneirodynia gravans*, *Erethismus oneirodynia*, *Asthma nocturnum*; Fr. *Cauchemar*, *Cauchevieille*, *Cochemar*, *Oneirodynie gravative*; Ger. *Alpdrücken*, *Trute*, *Alp*—which is characterized by a sensation of distressing weight at the epigastrium during sleep, and of impracticability of motion, speech, or respiration. “The sensation,” as correctly expressed by Dr. J. M. Good, “is said to be frequently preceded by some fearful dream, as that of an implacable enemy, known or unknown, in close pursuit of the dreamer, from whose grasp he feels incapable of escaping; or of exposure to some overwhelming danger by sea or land,—as that of falling from a steep precipice; or struggling amidst the ruins of a shipwreck, with rocks and breakers that threaten to dash him to pieces every moment.” Although these disagreeable dreams make an impression on the individual, which induces him to seek occasionally the advice of a physician, they differ but little, if at all, in their character, from ordinary dreams, in which the individual feels, that he is made to take a prominent part. Thus, many persons dream, that they have the faculty of flying over the heads of others, and performing sundry feats, which are equally impracticable. Nightmare was at one time ascribed to the person’s being “*possessed*.” Hence, in the Anglo-Saxon language, it was termed *Elfsidenne* or *Elf-squatting*. The male spirits are termed *Incubes* and the female *Succubes*.

The affection is often dependent upon the condition of the stomach; although, with some persons, it recurs every night, even when they are in perfect health. Should it be owing to supper taken at too late an hour, or to any appreciable cause, these agencies must be removed. Occasionally, it is experienced in one position of the body and not in another; and it was advised, by Dr. Darwin, that the character of the bed should be changed, and that a mattress or harder bed than usual should be used. It is impossible to lay down any therapeutical management, which is adapted to all cases.

#### XVI. DELIRIUM TREMENS.

SYNON. *Mania à Potù*, *Enomania*, *Mania e Temulentia*, *Delirium Potatorum*, *D. Ebriositatis*, *D. tremefaciens*, *D. vigilans*, *Meningitis seu Phrenitis Potatorum*, *Encephalitis tremefaciens*, *Erethismus Ebriosorum*, *Dipsonania*; Fr. *Délire tremblant*, *D. crapuleux*, *Folie des Ivrognes*, *Encéphalopathie crapuleuse*; Ger. *Sauferwahnsinn*, *Säuferzittern*, *Zitterwahnsinn*, *Gehirntzündung der Säufer*.

This disease is extremely common, both in this country and in many others, and is owing to the abuse of spirituous liquors, or of opium, and other narcotics; for well-marked cases of the disease are seen in opium-eaters, and something closely resembling it in persons who use tobacco too freely. It is one of the most frequent diseases that fall under the care of physicians to extensive eleemosynary establishments—as the Philadelphia Hospital. It consists essentially of delirium with tremors,—hence the name *Delirium Tremens*;—and it is placed in the arrangement of one pathologist, M. Dubois d’Amiens, as a terminating point to convulsive affections, and as forming a kind of transition between these and mental diseases.

**Diagnosis.**—In hospital practice, we meet with it in three forms. The *first* is, perhaps, little more than simple intoxication,—the tremors and hallucinations passing off as the effects of the stimuli cease. In the *second*, the tremors continue longer, with little or no mental aberration; and in the *third*, the whole nervous system is thrown into the greatest irregularity;—the upper extremities being tremulous in a high degree, and the mind completely unhinged; so that the senses of vision and audition are affected with the strangest hallucinations; and, at times, the patient is furiously maniacal. If this state continue—as it often does for days—there is, during the whole time, a total want of sleep, or the forgetfulness is for an extremely short period. Usually, the patient fancies, that he sees objects in the chamber:—insects crawling on the walls or bedclothes, which he occupies himself in endeavouring to lay hold of; and hears persons calling upon him from all parts of the house, so that if permitted, he would run about from one place to another, responsive to the ideal summons. The organic functions participate with the animal functions in the disorder. The respiration is generally short and hurried; the circulation quick and feeble; and, in bad cases, almost, if not wholly, imperceptible at the wrist; and the body is bathed in a cold clammy perspiration. The digestive function is, likewise, generally impaired,—the appetite being null; and, frequently, everything taken into the stomach is immediately rejected. The urine, according to M. Simon, has more or less of the inflammatory type; sometimes, however, it resembles healthy urine, in its colour and reaction. In a man, aged 40, who had a very severe attack, M. Becquerel found the urine acid for the first five days with a mean specific gravity of 1017·2. It deposited a sediment either spontaneously or on the addition of nitric acid. In another man, aged 40, who was in the third stage of phthisis also, and who died three days afterwards, the urine presented the characters of inflammation. It had a specific gravity of 1021·8, and deposited a sediment:

The duration of the disease varies. Commonly it terminates in a few days, in health; but, on other occasions, it is more protracted. Death is not a common occurrence, and when it does take place, it is generally preceded by coma,—at times—the author has had reason for believing—induced by the excessive use of opium in the treatment.

**Causes.**—Abuse of alcohol, is, doubtless, the main exciting cause of the disease; and, hence, it is more frequently seen in large towns than in the country; and amongst the lower, rather than the better classes. It may make its appearances during the sustained use of those articles, but this is rare. In almost all the cases, that have fallen under the author's care, and where the history could be traced, it supervened on the withdrawal of the accustomed stimulus. Under such circumstances, the function of innervation, habituated to excitement, is thrown into great irregularity, as it ceases to receive its wonted stimulation. Dr. Stokes lays considerable stress on the two opposite conditions under which the disease may occur,—after a debauch, or on the sudden suspension of the habitual use of alcoholic liquors. In the *first* case, he believes the pathological state to be gastritis, accompanied with high excitement of the brain and nervous system, owing to the absorption

of alcohol or to sympathy with the stomach, and tending strongly towards inflammation of the brain; yet, in such case, the gastritis may be masked by the irritation in other organs; the abdomen may not be tender, nor the tongue red, and all the symptoms may indicate a morbid condition of the brain, and yet violent gastric inflammation may be existent. In the *second* case, the functions of the brain, Dr. Stokes considers, are disturbed by the abstraction of an accustomed stimulus.

The author has met with several cases in which marked delirium tremens was caused by the abandonment of the use of opium and tobacco.

Delirium tremens is a disagreeable and uncomfortable complication in severe wounds and bruises, and is often seen in our hospitals; but it is questionable, whether it ever occur except in persons, whose constitutions have been predisposed to it by the abuse of some kind of narcotic. This form of delirium has been termed *delirium traumaticum*, and it certainly does not appear very unlike delirium tremens in its characteristic features. It is asserted too, to have been induced by great mental depression; but such cases must be exceedingly rare. A Danish writer, Høegh-Guldberg, finds but one case in 173 in the female, but in this country, as well as in England, the ratio of females is much greater: probably the female, owing to her greater nervous impressibility, is more liable to it, but escapes only in consequence of avoiding more the great causes.

**Pathological Characters.**—As in other neuroses, the appearances on dissection have thrown no light on the nature of the disease. Frequently, none are visible; at other times, signs of hyperæmia of the nervous centres, or of inflammation of the meninges, with effusion of serum into the ventricles, and of coagulable lymph from the vessels of the arachnoid, have been met with. M. Andral opened several persons who had died of the affection, and although he found, at times, evidences of disease in the meninges, he did not hesitate to date their occurrence long after its invasion. The author's pathological investigations have led him to the conclusions mentioned above. He has not been able to discover any pathognomonic appearances; and it is probable, that the disease is situate in conditions of the neurine itself, which are inappreciable.

**Treatment.**—As the disease, in the mass of cases, appears to be caused by the withdrawal of a stimulus to which the nervous system has been accustomed, it is not surprising, that a recurrence to the use of the particular stimulus should be recommended. This is the course most commonly advised by practitioners, and there can be no doubt, that it will usually cure the disease,—if the restoration of the patient to the condition in which he was, before the stimulus was withdrawn, can be esteemed a cure. The quantity of alcohol, which can be borne, is astonishing. The nervous system of the stomach has lost its ordinary impressibility, and the same may be said of the brain. A common plan is to begin with a tablespoonful of brandy, mixed with an equal portion of water, and to administer this every half hour, or hour, until the hallucinations cease, and sleep is restored; and there

can be no question, that it will generally be effectual,—as frequently, perhaps, as any other system of treatment. A great objection to it is, that the patient is confirmed in his habits, and taught to believe that alcohol has become indispensable to him. In many of our eleemosynary institutions, in which the plan of treating delirium tremens by alcohol is adopted, patients are known to return to the hospital whenever they are unable to obtain their usual quantity of spirit, and find, that they have—what they term—“*the horrors*” in consequence. Generally, perhaps, opium is regarded as the most efficacious remedy, and many practitioners are of opinion, that it alone is necessary. There is no question that this article again will be found effectual in the mass of cases. In the great irregularity of the function of innervation, which characterizes the disease, the nervous distribution may be equalized in two modes; in one case, by stimulation, which may be termed equalizing upwards,—by alcohol, for example; and, in the other, by sedation,—by large doses of opium, for example; and if once the equalization be accomplished by either course, tranquillity and sleep follow. But the disease does not always yield, when sleep has recurred, although this is a most favourable sign. The author has known many cases in which it persisted in considerable violence for some days after sleep had been induced. The practitioners, who employ opium most freely, give it in the dose of from one to three grains every hour, until sleep succeeds. The wonderful resistance, on the part of the brain, is exhibited, again, in the case of opium; which does not occasion narcosis, even when pushed to an enormous extent. Thirty or forty grains have often been given in less than 24 hours, without any of the ordinary effects being observed. When a tendency to sleep is evinced, the opium is discontinued; and, when given in large doses, its operation ought to be watched. The French practitioners speak of one hundred drops of the laudanum of Rousseau—seven drops of which are considered to contain a grain of opium—in the course of an hour, and of two drachms in the course of the day, as being sufficient to induce sleep. The practice, M. Andral says, was adopted from the English.

The treatment by opium, or that by stimulants, is followed by the generality of practitioners; but some, who regard the disease to be inflammatory or hyperæmic, have recourse to antiphlogistics from the commencement of the attack. There may be, and doubtless are, cases exhibiting the ordinary signs of encephalitis or of hyperæmia of the nervous centres, in which the abstraction of blood may be serviceable; but such cases are rare; and in those which present themselves in hospital practice—where the disease is chiefly seen—the indication is scarcely ever met with. Free bloodletting has, indeed, been observed by Dr. Marshall Hall to induce a degree of sinking, both in young and old, from which no means could restore the patient. Should such symptoms exist as those described above, cupping—dry, or with the scarificator—may be employed with as great a prospect of relief, and less risk of injury. By others, as by Dr. Joseph Klapp, of Philadelphia, the treatment has been made to consist almost exclusively in the employment of emetics. On them, at least, the main de-

pendence has been placed. When the patient is first seen by the physician, it may be advisable, in many cases, to evacuate the contents of the stomach; and, at a subsequent period, the equalizing and revellent agency of an emetic may be employed with advantage; but it is very questionable whether much good can arise from the repeated administration of agents, whose action may exhaust; and, under such feelings, with the absence of any markedly beneficial results from their use in many cases, they are by no means generally prescribed by practitioners.

The course, pursued by the author, has been entirely eclectic, in many cases expectant, and the results have been such as to satisfy him. Under the view, which he entertains, of the nature of the affection—that the irregularity of nervous action is induced by the withdrawal of an accustomed stimulus, and that the recuperative powers are, generally, entirely sufficient to bring about the necessary equalization, he has treated the mass of the cases, which have fallen under his care, without either excitants proper, or opiates. In the first instance, an emetic has been given at times, for the reasons above stated; and afterwards, the patient has been kept in a state of tranquillity in his chamber,—the intrusion of too much light and noise being prevented; and, where the stomach would retain it, gently nutritious and easily digestible diet has been prescribed; the bowels have been kept open by gentle cathartics; and this has comprised the essential part of the treatment. In time, the hallucinations have disappeared, sleep has returned, and entire restoration supervened.

Under the idea, so generally prevalent, that the patient will sink unless stimulants or opium are given,—if the attack be severe, the physician is apt to become alarmed, and to fly to those agents; but should he persevere, he will find, that his fears are groundless, and he will be encouraged in his course, when he reflects, that, by administering either brandy or opium, he cannot infuse fresh vitality into his patient, and can only act on the excitability that is already present. In the female lunatic asylum of the Philadelphia Hospital, the course here recommended was advised, during the author's term of attendance as one of the physicians to the establishment, and where it was carried out, the general result was satisfactory, in more respects than one. It has, in the first place, restored the individual to health—not perhaps as rapidly as either brandy or opium, but more permanently. The term "restoration to health" is hardly, indeed, applicable to the change effected by the former remedy: the patient is merely placed in the condition in which he was before the stimulus was withdrawn; and, as he was "restored" by the brandy, he is apt—as before remarked—to regard it as indispensable to his healthy condition. In the "total abstinence" plan, however, the habit of drinking is broken in upon, and even if it should require a short time longer to restore the individual, there is the consolatory reflection, that delay is not useless; as every day's privation of the wonted stimulus diminishes the feeling of necessity, and the desire for it. One evidence of the good effect of the course is, that they who are dismissed cured, rarely, or never, return to the wards. This is an obser-



vation that has been made at the Philadelphia Hospital, and as it concerns paupers, it is probable, that the cures are real and permanent, for were it otherwise, they would, on subsequent attacks, be compelled, in their destitution, to seek the wards of the same excellent charity. Under this eclectic course, it may be advisable, however in certain cases, to administer both excitants and opiates. Where a person has been accustomed for years to the daily use of large quantities of alcohol, the nutritive functions totter under the irregular innervation, and the recuperative powers seem to be insufficient to restore the balance of nervous action. These cases are, however, uncommon. In like manner, where sleep has not recurred, after a continuance for some days of the plan above devised, a full dose of opium,—two or three grains in the form of a soft pill,—frequently forms an excellent adjuvant. There are cases, too, in which the irritability of the stomach is so great, that no food or medicine can be retained, and the patient becomes exhausted by the irritation. A blister, applied over the pit of the stomach, and the blistered surface sprinkled with sulphate or acetate of morphia, (two to four grains at a time,) may allay the vomiting, after which such internal management may be adopted as the case may seem to demand.

Dr. M. Hall remarks, that “it becomes a serious question, whether any stimuli should be allowed” in delirium tremens. Our observation and reflection are—in the main—in favour of the negative; and the remark is applicable to the various excitant antispasmodics that are wholly trusted to by some, because the disease is characterized by tremors. All these “antispasmodics”—assafœtida, castor, &c.; are, like capsicum, mere stimulants. They are not possessed of any specific power over the disease, and are never employed by the author, unless he is desirous of exciting a new nervous impression on the gustatory nerves, and on the nerves distributed to the lining membrane of the stomach. The same may be said of the cold shower bath or *douche*. The shock or new impression, made by it, is at times salutary; but some discrimination is needed in regard to its application to those whose powers are greatly prostrated.

Admitting, then, that there may be cases, which demand something more than the expectant or eclectic treatment, these cases are certainly small in number; and a careful classification, by separating those who are considered to require imperiously the use of stimulants from those who do not, cannot fail to lead to results in the highest degree satisfactory to the philanthropist,—first of all, by preventing the indiscriminate treatment by alcohol adopted by many; and secondly—as a consequence of this—by leading to a more extensive reformation in the patients themselves. One of the author’s colleagues in the Philadelphia Hospital, Dr. Gerhard, is an energetic supporter of the method of treating the generality of cases by the free exhibition of alcoholic liquors, and, in support of it, cites the results observed in the men’s wards under his care, from October 12th, 1839, to October, 12th, 1840. Of 162 cases of decided delirium tremens. 87 were admitted in the first stage; 73 in the second; and 2 in the third: 160 cases recovered, and 1 remained convalescent, who is since well.

One only proved fatal; the patient was admitted in the third stage of the disease, and died in a few hours after his entrance; he had been treated with opium; and a box of pills, which he was taking was sent to the hospital with him. "Of course," adds Dr. Gerhard, "this apparent exception confirms the general conclusion, that the disease terminates favourably in every instance when treated according to the method recommended." Any inference, however, from a single year's observation, may be fallacious; and especially may it be questioned, when the results of a similar treatment adopted by the same observer and by others had been previously less markedly favourable. It is a well-known fact, that in certain seasons and years diseases are more severe than in others; and the circumstance, that of the 162 cases of delirium tremens, referred to by Dr. Gerhard as having been admitted in the year ending October, 1840, only two are classed in the third stage, sufficiently exhibits, that the disease must have been unusually mild. Its fatality appears, too, to be influenced by climate. Sir George Lefevre,—who practised long in St. Petersburg,—says, that it always proved fatal in the cases which he treated; but that in the naval hospital, where it was prevalent, opium and musk 'sometimes' succeeded in saving the patient.

The author has now before him a statistical account of the Women's Lunatic Asylum, at the Philadelphia Hospital, for the years 1840 and 1841, which was at the time under the author's charge during the six months, commencing on the first of November, and ending on the 1st of May; and under that of his colleague, Dr. Pennock, for the other part of the year. It may be proper to add, that from November 1st, 1841, to May 1st, 1842, not a drop of alcoholic liquor was used in the treatment of delirium tremens in the Women's Asylum, although some severe cases in the third stage occurred, which, notwithstanding, terminated most satisfactorily.

*Patients treated during the years 1840-1841.*

	Cases admitted.	Cured.	Died.
Intoxication, - - - - -	44	44	0
Delirium tremens, 1st stage, - - -	55	55	0
do. do. 2d stage, - - -	19	19	0
do. do. 3d stage, - - -	10	9	1

The fatal case was not seen by the author. The patient died the morning after her admission, and had been treated in the city for nearly a week previously. A more recent authentic abstract of the number of patients admitted into the same asylum, from the 1st of November, 1844, to the 4th of February, 1845, exhibits that 32 cases were received, 18 of which are classed as intoxication. Of these not one died. The treatment here, again, was eclectic; often expectant; and not a drop of alcohol was given. It cannot consequently be considered, that Dr. Gerhard has settled the value of the treatment "upon a more definite basis than has yet been done." The investigations ought to be continued through a succession of years; the different methods of treatment be compared extensively, and under circumstances as nearly identical as possible, before any such conclusion can be considered

established. Moreover, the results obtained by Dr. Gerhard—successful as they were—are not more so than those recorded by an observer already cited, who places great reliance on the treatment by emetics. In a report, made by Dr. Klapp, he states, that of 51 cases, all but one were cured without the use of a grain of opium, or a drop of alcoholic drink of any description;—the unsuccessful case died of epilepsy.

The observations of an able observer, Dr. Ware, of Boston, so far as they go, are confirmative of the eclectic, and indeed, of the expectant method of treatment. Of 69 cases observed by him, the treatment in 29 was expectant, by which, however, he does not mean to imply, that no remedies were administered. “At the commencement of many of them, active measures were employed for a short period. Thus, some were bled; some leeches; to some an emetic was given; several were blistered upon the neck; and all were more or less subjected to the operation of cathartics. Besides these remedies at the outset, various articles were administered in the course of the several cases, but usually of an inefficacious character, or in such doses as probably to have had no influence on the course of the disease. For example, small doses of *sp. æther. nit.*, *liq. ammon. acet.*, *tinct. hyoscyam.*, *ext. conii*, *tinct. humuli*, *tinct. valerian.*, *tinct. assafœtid.*, and various other medicines were administered; but from the amount and efficacy of the substances thus taken, no physician acquainted with their power would, for a moment, suppose them to have had any control over the disease.” The results of the different modes of treatment are thus thrown together in a tabular form.

Treatment.	No. of cases.	Bled.	Died.	Recovered.	Complicated with acute disease.
Opium, large doses, -	8	0	4	4	1
— small, - - -	7	1	2	5	1
Emetics, - - - -	12	1	1	11	2
Bleeding, - - - -	2	2	0	2	0
Eclectic, - - - -	9	5	3	6	7
Quinia, - - - -	1	0	0	1	1
Mercurials, - - -	1	0	0	1	0
Expectant, - - - -	29	4	1	28	1
	69	13	11	58	13

It appears from this statement—says Dr. Ware—that of 15 cases, in which opium constituted the principal remedy, 6 died; whilst of 54, in which opium was not used at all, or only incidentally and in small quantities, only 5 died. Still further, if we separate from these 54 the 9 cases in which the treatment was eclectic, and in which the mortality seems to have arisen from the combination of acute disease, we have a remainder of 45 cases, of which only 2 were fatal. Again, if we compare the mortality of those cases, in which opium was pushed to the full extent advised by writers on this disease, with those in which no active remedy was employed, we have a mortality of 1 in 2, against a mortality of 1 in 29.

Dr. Stokes, in accordance with his views, already referred to, that delirium tremens, occurring after a debauch, consists in gastritis, ac-

accompanied by high excitement of the brain and nervous system, whilst another form consists in the sudden suspension of the habitual use of alcoholic liquors, adopts a plan of treatment very different in the two cases; and affirms, that in the Meath Hospital, the treatment for gastritis has been used, in the first case, with "extraordinary success,"—the most aggravated symptoms of delirium tremens having been subdued by leeches to the epigastrium and iced water; and it was found—in the same institution—that in patients who died under the stimulant treatment, inflammation existed either in the stomach, or in the substance, or membranes, of the brain. In the second case the indication, Dr. Stokes conceives, is to restore the stimulus; and here, he thinks, the ordinary practice of giving brandy, wine, porter, opium, &c. is proper and successful. The author's views, in regard to these points, have been given already. He may add, however, that caution should be used in regard to the employment of depletion, even where gastritis really exists; for such subjects rarely bear much reduction.

Under the great impressibility of the nervous system, induced by delirium tremens, the effects of the new impressions made by the operations of the animal magnetizer have been, in rare cases, successful in inducing sleep. In one, which occurred in the author's Clinic at the Philadelphia Hospital, in a female patient, who had not slept for four successive nights, and had taken, in all, equal to eighteen grains of opium since her admission, but none for the sixteen hours previously, it occurred to the resident physician, Dr. Vedder, now of Schenectady, to test *animal magnetism*; as it is termed, as a therapeutical agent. The usual passes and manipulations were accordingly practised, in the presence of Dr. Taylor, of Philadelphia, another of the resident physicians, and the keeper. At the time the patient was awakeful as she had been at any time previously. Her thumbs were grasped, as she was lying in bed; a few "passes" were subsequently made, and in three minutes, to the surprise of the gentlemen, she was in a sound sleep,—evinced by snoring, and diminished frequency of respiration, both of which were carefully noted. She could be aroused when spoken to in a loud tone,—starting suddenly but falling asleep again. She slept until 12½ o'clock, four hours and a half, and awoke spontaneously. At 10½ o'clock, her hand was placed near her forehead, but not so as to touch it, and it remained in this constrained position until she awoke. A short time afterwards, sleep was again produced, after holding her thumbs for one minute and three quarters, and she slept for three hours and a half. Her pulse, whilst awake, was 84, but it soon fell to 60 when she was asleep. The number of respirations suffered a corresponding diminution, but they were fuller. It may be remarked, that this patient was thrown into a complete state of catalepsy, during the artificial sleep, in which state she was seen by the author. Her limbs, when placed in any position, retained it. Her lower extremities were raised from the bed at an angle of about 30° with the plane, and in this position they remained for ten minutes, supporting, at the same time, the weight of the bed-clothes; and they would have remained still longer, had it been thought proper. It was afterwards discovered, that it was not necessary to touch her

person to produce sleep, and that it could be done in less than a minute by simply looking at her. She was put to sleep by several of the resident physicians, who were witnesses to many of the experiments. Similar attempts were made on two female patients, labouring under the same disease, but the success was very imperfect. (The author's *American Medical Intelligencer*, for Feb. 1, 1839, p. 331.)

Throughout the course of the disease, light nourishment, as arrow-root, sago and tapioca, with or without milk, and occasionally a little wine or brandy, may be allowed. Often, however, there is little or no appetite; but still the patient should be encouraged to take a moderate quantity of aliment. During convalescence, it may be advisable to administer gentle tonics, as any of the bitter infusions, with the view of restoring the tone of the stomach.

### XVII. MENTAL ALIENATION.

SYNON. Alienatio Mentis, Ephronia, Deliria, Vesania, Unsoundness of mind, Insanity, Mental derangement, Deranged intellect, CraziNESS; *Fr.* Folie, Égarement d'esprit, Aliénation mentale.

Definitions of mental alienation have often been attempted, but it is not easy to give one, that is entirely satisfactory. We usually understand by it, in the general or abstract signification, a continued or intermittent derangement of the intellectual and moral faculties, commonly unattended with fever. The absence of fever has, indeed, been made by some a characteristic,—*delirium cum febre* being employed to designate the derangement or incoherency, which is noticed with febrile exaltation of the system; and *delirium sine febre* for the derangement now under consideration. The divisions of mental alienation have caused equal difficulty, and one, which is to be deplored, inasmuch as it prevents those accurate statistical comparisons, which are so desirable. Most of the French writers, however, adopt the same divisions, and it is, therefore, advisable to follow them, even if some objections may apply.

Mental alienation may consist either in perversion, or in impairment, or loss of the intellectual and moral faculties. Under the *first* of these conditions may be reckoned, with Dr. Prichard, 1. *Mania*, in which the intellect is completely perverted on all subjects. 2. *Monomania*, or partial insanity, in which the perversion is restricted to one subject; and 3. *Moral insanity*, which consists in a morbid perversion of the natural feelings, affections, inclinations, temper, habits, moral disposition, and natural impulses, without any remarkable disorder or defect of the intellect or knowing and reasoning faculties, and particularly without any insane illusion or hallucination. Under the *second* may be comprised: 1. *Dementia*, in which the intellect is impaired or destroyed; and 2, *Idiocy*, where the privation is congenital or has existed from birth.

1. *Mental alienation, consisting in perversion of the intellectual and moral faculties.*

**Diagnosis.**—This form of mental alienation usually commences with some strange aberrations in the tastes, notions and actions, of the in-

dividual, which are different from those of other persons, and of himself when of sound mind. These may continue for a longer or shorter period; after which the disease becomes rapidly formed, and soon attains its full characteristics. The strangest hallucinations are experienced; the patient sees objects, that have no existence, except in his imagination; and equal illusions are experienced in the senses of hearing, smell, and taste; whilst the ordinary effects of irritants and of narcotics are not felt by him. He will remain in the cold until his limbs are gangrenous, and fast for an incredible period without uttering any complaint. It is a common remark, that cold has not the same influence upon the organic actions of the sane and the insane; but this would appear to be an error. The physical effects are identical, but the organ, by which all perception is received, being in a state of exaltation, and employed in its own disordered acts, the usual painful sensations are not experienced. At times, reason entirely forsakes her seat, and the insane talk incessantly, and incoherently, and in the most excited manner; at others, they reason accurately on all subjects except one, and the greatest ingenuity is occasionally necessary to touch the chord which vibrates injuriously, and excites the insane delirium; but the moment it is touched the delusion is manifested. In the language of the poet,

"It may be a sound,  
A tone of music, summer's eve or spring,  
A flower, the wind, the ocean, which shall wound,  
Striking the electric chain wherewith they're darkly bound."

However perverted may be the reasoning faculties, the insane generally recollect past transactions and occurrences; but their affections for their former associates and relations are usually much changed, and it is a common occurrence for them to look with the darkest suspicion, and entertain the greatest hatred towards their nearest connexions. Their feelings and actions are, indeed, of the strangest character; some are gay, timid, wild, frank, and humble; others sober, dull, passionate, cunning, mischievous and haughty; whilst others, again, have an irresistible propensity to destroy themselves, their fellow-creatures, or the objects surrounding them; or are engrossed with melancholic, religious, erotic, or other form of monomania. The expression of the face usually depicts vividly the predominant emotion. When under powerful excitement, the face is flushed, the eyes are widely open, and sparkling; the temporal and carotid arteries beat forcibly, and the voice is loud and clear; at other times, on the contrary, the face is pale, the expression one of tranquillity, and the voice is weak. Sleep is indulged but little; and is generally disturbed and not refreshing.

Much attention has been paid, of late, to the urine in the different forms of mental alienation. Its most characteristic feature, according to M. Simon, would seem to be—the excess of ammonia excreted as carbonate, urate, chlorohydrate, or ammoniaco-magnesian phosphate.

It has been already remarked, that the insane delirium is distinguished from the febrile by the absence of disordered organic actions in the former; although, as a general rule, the pulse of the insane has

been found by Dr. Pliny Earle and others, to be more frequent than in healthy individuals. Whilst the insane delirium is at its height, the nutritive functions may be well executed, the appetite be good, and the digestion easy.

In *Mania*—*Ecphronia mania*, *Delirium maniacum*, *D. mania*, *Vesania mania*, *Furor*; Fr. *Manie*; Ger. *Manie*, *Wuth*, *Raserei*,—the mental perversion is general and excited. Hence, it has been termed *raving madness*. When its highest pitch is attained speedily, it is termed *acute mania*: when more tardily, and the disease has been of protracted duration, it is called *chronic mania*. In *Monomania* or *melancholia*,—*Ecphronia melancholia*, *Melancholia*, *Mania melancholia*, *Lypomania*; Fr. *Mélancolie*, *Monomanie*; Ger. *Melancholie*, *Schwer-muth*, *Trübsinn*,—that is, in cases of insanity where the insane delirium concerns but one idea or but few, epithets have been assigned to characterize the variety. In *ambitious melancholy* or *monomania*, the patient believes himself a king or some exalted personage; in the *erotic* form, he adores some imaginary or real being; in the *religious*, is perpetually praying; in the *demonomaniacal*, in constant dread of punishment hereafter; and in the *misanthropic*, in hatred of his fellow-men. The symptoms of *Moral Insanity* may consist in singularity, waywardness and eccentricity of character, fickleness and capriciousness of conduct; tendency to gloom and sadness or to preternatural excitement, and to unusual prevalence of angry and malicious feelings; to a propensity to commit every species of mischief, and to theft.

2. *Of Mental Alienation, consisting in impairment or loss of the intellectual and moral faculties.*

a. *Dementia*, *Amentia*, *Anæa*, *Fatuitas imbecillitas*, *Moria demens*; Fr. *Démence*; Ger. *Blödsinn*. This form of imbecility occurs in the course of life, and, in this respect, differs from idiocy. It may supervene on mania or melancholy, or may make its first appearance in old age, constituting *dotage*. It is characterized by total incoherence of ideas, and absence of all faculty of reflection,—the brain, in confirmed cases, having lost even the power of appreciating correctly impressions from without. All recollection of the past is commonly lost, although, at times, the loss is confined to recent occurrences, whilst the events of former days are vividly recalled. In deep dementia, however, every intellectual and moral manifestation is gone, so that the individual has no feeling for the past, present, or future; and drags on a vegetative existence of the most helpless and deplorable character. Occasionally, the animal feelings persist, and he laughs or cries without any obvious cause. Dementia generally takes place progressively, and is usually preceded by furious mania; at other times, however, the sinking or subsidence of the faculties is gradual.

b. *Idiocy*, *Idiotismus*, *Moria demens anæa*; Fr. *Idiotie*; Ger. *Blödsinn*. This form of imbecility differs chiefly from dementia in being *de nativitate*. It may exist in various degrees, and is dependent upon imperfect organization of the encephalon. The symptoms that mark

fully developed idiocy cannot readily be mistaken. The physiognomy is sufficiently characteristic;—a vacant stare of the eyes; the mouth open, and, at times, slaving; with imperfectly developed head, attract the attention even of the unprofessional; and these traits are usually accompanied by great hebetude of memory; faulty articulation, and even utter impracticability of learning, or pronouncing a single word; intelligence so feeble, that the most simple ideas can scarcely be laid hold of; and, at times, total loss of comprehension. These are amongst the chief characteristics of this deplorable state. The degree to which the power of speech exists has been regarded as a measure of the intelligence. Where the powers of the brain are so feeble, that words cannot be appreciated so as to be repeated, idiocy is extreme; but where the powers are greater, the facility for spoken language will be increased, and may, therefore, afford a criterion of the degree to which the imbecility exists.

Although the intellectual part of the idiot may be thus defective, his animal propensities—particularly those that are developed at puberty—being uncontrolled by reason, are often displayed most offensively. He is filthy, and requires constant attention. Occasionally, amidst the absence of other faculties, the memory is good, or a talent for music, or some other faculty, may be exhibited to such a degree as to excite astonishment.

The insane are liable to a kind of *general paralysis*, which is often observed in the advanced stages of insanity, and especially in cases which are passing, or have already passed, into dementia, and has been ascribed to chronic inflammation of the circumference of the brain. It is more frequent, according to M. Esquirol, in men than in women. Its first symptom is usually impaired action of the tongue, causing the articulation to become difficult. The muscles of the legs are then implicated, so that the gait is unsteady. Thus far, the upper extremities and the sensibility are unaffected; but, in the course of some months, the disease proceeds, until the patient is unable to remain erect: he is compelled to be seated, or in the horizontal posture,—gangrenous eschars forming on the parts that are subjected to pressure,—until he sinks under the supervening irritation in the lungs, alimentary canal, or some other organs. The mean duration of this paralysis is said, by M. Calmeil, to be 13 months. It rarely happens, that the paralytic insane recover. One of the most experienced observers—M. Esquirol—has been able to cite only three cases of cure.

**Causes of Mental Alienation.**—There is no doubt, that a constitutional predisposition to insanity may exist, which is either hereditary or original, inasmuch as the application of the same exciting causes to others, not possessed of such a predisposition, does not induce the disease. It would appear, that persons born before their parents had become insane, are less subject to insanity than those who are born after the disease has exhibited itself. Where such hereditary predisposition exists, the disease is apt to appear in different individuals of a family at a particular period of life.

There are some strange but rare cases, which would seem to show that a powerful emotion experienced by the mother during utero-ges-



tation may affect the child, and cause it to be idiotic, or predispose it to mental alienation at an after period. M. Pinel, and many other authors, refer to such cases; but the most extraordinary, as Dr. Andrew Combe has remarked, are those mentioned by Baron Percy,—known to all as a distinguished French army Surgeon and Professor,—as having occurred after the siege of Landau, in 1793. In addition to a violent cannonading, which kept the women for some time in a constant state of alarm, the arsenal blew up with a terrific explosion, which few could listen to with unshaken nerves. Baron Percy states, that of 92 children, born in the district within a few months afterwards, sixteen died at the instant of birth; thirty-three languished from eight to ten months, and then died; eight became idiotic, and died before the age of five years; and two came into the world with numerous fractures of the bones of the limbs, caused by the convulsive starts in the mother, excited by the cannonading and explosion.

Statistical inquiries, according to M. Esquirol, have exhibited, that in France, the ratio of insane women to insane men is as 14 to 11. In Italy, on the other hand, the ratio of insane men to insane women, is as 5718 to 5067. In Holland, again, the ratio of females to males, according to M. Guislain, is as 29 to 34; in Great Britain and Ireland, as 13 to 12; and in this country, it has been estimated as 2 to 1. Taking the results of inquiries in various parts of the civilized world, it would not seem that there is much difference between the sexes. Of 76,526 cases, enumerated with this view, 37,825 were males, and 38,701 females,—the ratio of males to females being thus as 37 to 38 nearly.

Mental imbecility is common before the age of puberty; but mental perversion is rare. It would seem from the calculations of M. Georget, that the ages, at which insanity is most frequent, are between 30 and 40; next, between 20 and 30; and lastly, between 40 and 60. The proportional number of females attacked before their 20th and after their 50th year is greater, according to M. Esquirol, than that of males. The admission of the insane into different hospitals, in England and France, took place at the following ages, according to M. Georget.

Number.	Ages.
356	from 10 to 20 years.
1106	“ 20 to 30 “
1416	“ 30 to 40 “
861	“ 40 to 50 “
461	“ 50 to 60 “
174	“ 60 to 70 “
35	above 70.

It must, however, be remarked, with Dr. Prichard, that 1416, attacked with insanity, between 30 and 40 years of age, is a smaller proportional number than 174 between 60 and 70; as the number of persons living at the former age is so much greater than at the latter; and, indeed, careful examination shows, that the predisposition to mental derangement increases with advancing age, although in an irregular scale. From 70 to 80, the ratio becomes enormous, owing to the frequency of *senile dementia*.

One of the most formidable of the predispositions is the influence of previous attacks. It has, indeed, happened, that after repeated attacks of insanity the predisposition has been lost; but, most commonly, the individual, after one attack, is left more liable to the disease than he was previously.

Elevated heat is not only a cause of insanity, but has an injurious effect upon the insane themselves; hence it is, that the summer solstice is proverbially exciting to them. When ideas prevailed in regard to sol-lunar influence on these unfortunates, it was believed, that direct solar agency was exerted, but the exacerbations, under such circumstances, are now universally ascribed to the proper cause,—the excessive heat and great length of days at that period. It is a common observation with the army medical officers, that if a recruit be drafted for a torrid region, who is predisposed to insanity, the disease is very apt to be developed there. We can thus understand, that the number of admissions into insane establishments may be greater in summer than in winter; and the well-known fact, that the Sirocco, of Italy, has a manifestly prejudicial action upon them. It appears, that there is an old law in the kingdom of Naples, which assigns a different mode of punishment for offences committed during its prevalence.

The average frequency of insanity, in the different seasons, has been estimated by M. Andral to be in the following order:—summer, spring, winter, autumn. This applies especially to mania;—monomania and dementia appearing to occur equally at all seasons. In Naples, however, monomania was observed to be more frequent in the month of September. In England, November has been in the worst repute, having been designated, but without any adequate reason, the *hanging month*. Statistical inquiries, indeed, negative the vulgar notion. As regards the termination of the disease, some observers have assigned the greatest number to autumn; and the greatest mortality to December, January, and February.

Not many years ago, the belief in the influence exerted by the full moon on the insane was universally credited. From this very belief they were termed *Lunatics*, and the disease *Lunacy*; and the notion has even been incorporated into the legal definition of insanity. “A lunatic,” says Sir W. Blackstone, “is, indeed, properly one that hath lucid intervals, sometimes enjoying his senses, and sometimes not, and that frequently depending upon the change of the moon.” Yet, it has been unequivocally established by careful and accurate observations in large insane establishments, that if the light of the full moon be excluded, the patients are not more liable to exacerbations in their disorder at these, than at other, periods. They are certainly more agitated at the full of the moon, and so are they at break of day. *Light* is the cause of the increased excitement at both periods. The stimulus of light frightens some lunatics, pleases others, and agitates all. (See the author's *Human Health*, p. 134, Philad. 1844.)

A *coup de soleil*, or exposure to the hot rays of the sun, has been assigned as a cause of madness, but it is not a common one. Many of the French soldiers, in the campaign of Egypt, were said to have

returned home insane from this cause; but there were other important and disturbing agencies at work in that distant and perilous expedition. The same occurrence is, indeed, recorded of the campaign in Russia in 1812.

Injuries of the head occasionally induce mania, but more frequently encephalitis. When mania does supervene, it is, at times, not until after the lapse of several years. Rare cases are on record, in which the intellectual faculties have been brightened by such an accident. Dr. Prichard was informed, on good authority, that there was, some time since, not far from Bristol, a family consisting of three boys, who were all esteemed to be idiots. One of them received a severe injury of the head, after which his faculties began to brighten, and he is now a man of good talents, and practises as a barrister. The brothers are still idiotic or imbecile.

Spirituous liquors are a common cause of one form of delirium, already treated of,—delirium tremens; but not, so far as the author has observed, of mental alienation. In this country, where delirium tremens prevails to a great extent, and where a good opportunity exists for noticing the effect of alcohol in inducing insanity, we do not see a great many cases, that can be unhesitatingly referred to it. The fact, too, of the great number of insane among the Society of Friends, who rarely indulge in any form of alcoholic drinks, is—so far as it goes—against the idea of alcohol being an extensive cause of mental alienation. Yet—it is proper to remark—that in the reports of many public institutions, dram-drinking is presumed to have been a common exciting cause. In the Massachusetts State Lunatic Asylum, one-fifth of the cases have been attributed to it; yet in the Connecticut Retreat for the Insane, of 116 patients, only two are stated, in one of Dr. Brigham's reports, to have been rendered insane by intemperance, and two others by dissipation, and exhaustion consequent upon dissipation. This last institution receives, however, fewer pauper lunatics than the other.

It is not improbable, that the abuse of alcohol may lay the foundation for insanity in the progeny. It has been observed, indeed, that many insane have been the children of persons, who had indulged largely in the pernicious habit.

Abuse of mercury has been considered to induce mental alienation; but this has been denied by others, and it has been conceived, that the disease may have been rather owing to abuse of sexual intercourse, and the kind of restless life to which the individual may have been exposed, than to the remedy employed for certain morbid conditions that may have been coexistent. Excessive venery has, also, been regarded, as a cause of insanity, and especially of dementia. In the annual reports of most of our lunatic asylums and penitentiaries, many cases are referred to masturbation. The reports of Dr. Woodward, of the Massachusetts State Lunatic Hospital, and Dr. Awl, of the Ohio State Lunatic Hospital, for example, make the proportion of cases about 25 or 27 per cent.; but, we are satisfied, the influence of this practice is exaggerated by some of the observers. A writer, who has had much experience in insane cases, Dr. Brigham, of Hartford,

much doubts, whether masturbation be a frequent cause of insanity. "I am aware," he remarks, "that the insane are frequently seen to practise it, and I know, that in them it has, sometimes at least, most baneful effects, hurrying them to idiocy and death; but generally I regard it as the effect of the disease of the brain, which causes the insanity. A few years since," he adds, "I caused much inquiry upon the subject to be made at the Connecticut state prison. I ascertained, that there was scarcely an instance of a prisoner who did not practise it; many of them had for years, and some of them daily. I have no doubt it is a very common practice among prisoners, yet we seldom hear of one becoming insane from this cause. I never have heard of a single instance." It certainly is a very prevalent vice in our penitentiaries; but, as before observed, its influence in the production of insanity has been, doubtless, exaggerated. At times, indeed, insanity would appear to arise from the mental effort employed to overcome desires that are almost irresistible. Satyriasis in the male, and nymphomania in the female, must be regarded as cases of moral insanity. But although excessive venery is a cause of mental alienation, the state of celibacy appears equally to favour it,—the number of single insane persons being everywhere greater than that of the married. This result may depend, however, upon moral influences of another character.

Sudden suppression of the catamenia has induced the disease; and in old cases, the greater impressibility of the female at the menstrual period frequently gives rise to exacerbation of the disorder. A case is recorded by M. Esquirol, of a young girl, who was attacked with insanity at the age of 15, on the first appearance of the catamenia, and who was not cured until the critical time of life. The same writer refers to the case of a young woman, who suddenly exclaimed to her mother, that she was cured; her catamenia had flowed spontaneously, and her restoration to reason was the immediate consequence. Pregnancy, likewise, exerts an influence. Some women become insane whenever they are in that condition; and one of the most interesting forms of insanity occurs in the childbed state—*puerperal insanity* or *mania*. Occasionally, mania has followed weaning, and it is one of the consequences of undue lactation.

Various diseases of the brain may predispose to insanity. Violent mental emotions, misery, and great public calamities are well known causes. The inhabitants of the country, whose life is more peaceable, and less exposed to excitement, are attacked in smaller number than those of the towns. The results of all inquiries have shown, that persons in easy circumstances are far less subject to insanity than those who are indigent, and too often irregular in all their habits. The ratio of the insane among the indigent classes in England is surprising. Of 14,000 insane persons in England and Wales, 11,000, according to Sir A. Halliday, are supposed to be indigent. In the census of the state of New York, taken in 1835, it is stated, that of 967 lunatics, (that is exclusive of idiots,) 382 were supported by charity, and 312 were able to support themselves—leaving 273 not classified, but who—it is affirmed—were doubtless in indigent circumstances. From estimates, made

by the author, as chairman of a committee to draw up a memorial to the legislature to ask for the establishment of an asylum for the insane poor of Pennsylvania, the number of insane at the latter end of the year 1838, was found to be at least 1,600 or 1,800, of whom 600 or 700 were lunatics, and 1,000 or 1,100 idiots; and of these lunatics, it was estimated, that from 400 to 500 might require the assistance which the contemplated charity was to be capable of affording.

Care and anxiety, passions and emotions, apprehensions relative to salvation, or other religious impressions, if excessive, may be exciting causes. It has been argued, indeed, that the number of the insane is in a direct ratio with civilization, but the medical statistics of countries does not altogether establish this; although there can be no question, that civilized man is more subject to insanity than the savage. From estimates made by M. Brière de Boismont it would appear, that in England, the proportion of the insane to the whole population is 1 in 783; in Wales, 1 in 911; in Scotland, 1 in 573; in the Rhenish provinces, 1 in 1,000; in Norway, 1 in 551; in France, 1 in 1,000; and in Italy, 1 in 3,785; yet MM. Foville and Brière de Boismont would scarcely admit, that the people of Norway are more civilized than those of France. The proportion of insane in the large cities has been enumerated as follows:—London, 1 in 200; Paris, 1 in 222; Milan, 1 in 242; Florence, 1 in 338; Turin, 1 in 344; Dresden, 1 in 466; Rome, 1 in 481; Naples, 1 in 791; St. Petersburg, 1 in 3,133; Madrid, 1 in 3,350; and Grand Cairo, 1 in 30,714. There is certainly a singular difference between these countries, as there would appear to be between the different states of this Union, in the number of the insane; but the difference is by no means easy of explanation. In New Hampshire, when the population did not exceed 280,000, the number of lunatics was estimated at 600; in Connecticut, in a population of 298,000, at 700; in Massachusetts, with a population of about 612,000 there were 1,000; and in Virginia, taking the population at 1,200,000, it was estimated that there were, in 1838, not fewer than from 600 to 800 insane persons. In New York, the ratio in 1835 was considered to be 1 in 887 and a fraction; and the probability is, that it is quite as great in Pennsylvania, where, under the lowest estimate, there were probably, in 1841, not fewer than 2,000 persons, lunatic and idiotic, of whom it has been estimated that about 1,200 may be idiots; 800 lunatics.

It has been suggested, that owing to Norway and Scotland being mountainous countries, idiots are more numerous than in those which are more level,—idiocy or mental *imbecility*, Esquirol conceives, being owing to physical circumstances connected with locality, whilst madness or mental *perversion* is the product of society and of intellectual and moral influences. In idiocy, causes have interfered with the development of the organs; in madness, the over-excited brain has transcended its healthy boundaries. But, although locality has, doubtless, its influence in the production of certain forms of insanity, as of other diseased conditions, it is impossible to regard the rule absolute, when we refer to the enumerations of Europe or of this country,—the proportion in Wales, which is extensively mountainous, being small, and that of Italy, traversed by lofty ridges, the least in the table.

One of the most striking instances of idiocy induced by locality is *cretinism*,—a species of fatuity connected with personal deformity, which is well known to exist in the Valois, and in some other parts of Switzerland.

Diseases of the digestive tube likewise give rise to insanity. Most commonly, the form of unsoundness of mind is that of hypochondriasis. Perhaps the cases of living animals in the stomach, which we often meet with, may be connected with some morbid condition of the organ; the gastric suffering being real, but incorrectly appreciated by the brain. That the morbid condition cannot, however, be always restricted to the stomach, is shown by the fact, that the uneasy feelings assigned to the presence of a living animal in the stomach are often referred to the back, upper extremities, and to other parts, which have no connexion with that viscus. These feelings are neuropathic, and inaccurately interpreted. In other diseases, as in phthisis, the brain remains singularly free, so that the intellect may continue unclouded, until within a short time previous to dissolution. The author has seen two fatal cases of rheumatic pericarditis which terminated in furious mania not more than 12 hours before death.

Loss of blood has, likewise, been considered by Dr. Marshall Hall a cause of mania, and M. Magendie has enumerated too great indulgence in sleep, as a cause of lunacy and idiocy, whilst a recent writer, Dr. Brigham, states it as his opinion, that the most frequent and immediate cause, and one of the most important to guard against, is the want of sleep. It can rarely happen, perhaps, that too much sleep is the cause of mental perversion; and in cases of protracted vigilance, the phenomena may properly, perhaps, be regarded as the earliest manifestation of the mental malady. "Notwithstanding strong hereditary predisposition, ill health, loss of kindred or property," says Dr. Brigham, "insanity rarely results unless the exciting causes are such as to occasion loss of sleep. A mother loses her only child, the merchant his fortune, the politician, the scholar, the enthusiast, may have their minds powerfully excited and disturbed; yet if they sleep they will not become insane."

Dementia supervenes, at times, without any very manifest cause. At others, it seems to result from encephalic disease. It is not an uncommon sequel of serious disease of the encephalon, as of paralysis, and chronic affections of the brain and its meninges,—of epilepsy, and occasionally of chorea.

**Pathological Characters of Mental Alienation.**—The attention of the best observers has been directed to the brain, with the view of discovering, whether there be any pathological lesions to which the derangement in the intellectual and moral manifestations can be referred; and since the time of Morgagni numerous examinations of the dead have been made with this view. They have failed, however, in shedding any steady light on the true nature of insanity. Such, however, is not the opinion of some of the more modern observers, who maintain, that the brain presents alterations, which are susceptible of detection by the pathologist,—that these alterations differ according as the disease is acute or chronic; and with the nature of the symp-

toms, according as they consist in affections of the intellect or of motility.

At one time, insanity was esteemed a purely nervous disease, and not to be elucidated by pathological investigations; at another, as an affection of the vital forces of the brain, not as an organic disease of that viscus: at another, of *acute*—in the first instance—and afterwards of *chronic* inflammation of the encephalon; at another, of irritation of the encephalon, often induced by disease elsewhere; and at others, again, as an inflammation of the superficial gray matter of the encephalon. From all his observations, M. Foville is led to infer, that morbid changes in the cortical or gray substance are directly connected with intellectual derangement, whilst those affecting the white substance are directly connected with disorders in the motive powers. The appearances in the gray portion of the brain, according to the gentleman just cited, consist in injection, of a red or deep brown colour, either generally or partially; and in *ramollissement* or softness, so that portions of the encephalon are raised with the meninges when the latter are detached,—the membranes being opaque, and covered with serum, lymph, or pus. The bones, too, have been found, in some cases, thickened and indurated; and, at others, have presented a kind of atrophy, in which the diploë had disappeared, the external plate approaching the internal in such sort, that a very manifest depression was observed externally. Still, as we have seen, the necroscopical examinations of other excellent observers have not confirmed those of M. Foville, and were it even proved, that the appearances enumerated are to be met with on the dissection of the insane, a most important question would arise, whether they can be regarded as the organic cause of the mental perversion, or whether it be not as probable that they are the effect. If, indeed, it be admitted, that any mental influences can induce encephalitis, it is easy to see, that the same morbid condition may supervene on the excited manifestations of the insane.

In dementia, the morbid appearances have been as follows:—the brain pale and exanguious; the gray substance shading off into the white. The encephalon has been noticed to be decidedly diminished in size, with sinking of the convolutions, and augmented consistence of the encephalic substance: at other times, the substance has been found soft, and the parietes of the cranium thick, the inner table projecting, with augmented space between the tables;—appearances—it will be observed—which can by no means be esteemed distinctive. In idiocy, the parietes of the skull have likewise been found thickened, and the encephalon remarkably small; the convolutions small, and the anfractuositities shallow: frequently a whole lobe of the brain has been found wanting, the destroyed part forming a digital depression, when the sides were brought together; at other times, the portion destroyed is replaced by a cyst containing serum, and these changes have been coincident with paralysis and wasting of the limbs. Induration of the white substance, and traces of encephalitis have also been met with. In the general paralysis, described as one of the complications of insanity, dissection would seem to have shown, that there is no effusion of blood in the encephalon; but there is acute *ramollissement* or san-

guineous congestion; a condition which—it has been conceived—is almost always dependent upon chronic inflammation at the periphery of the brain.

It has been asserted by one observer, that the brain of the insane does not weigh as much as that of the sound individual, but others have arrived at opposite results. MM. Leuret and Mitivié found the brains of sane persons to be, on the average, of the specific gravity 1.028; those of the insane 1.030; of maniacs, 1.031; of those in a state of dementia, 1.032; and of monomaniacs, 1.034;—the mean specific gravity being 1.031.

It has been an interesting inquiry, and one which it was presumed would shed light on the subject of phrenology,—whether there be any correspondence between the shape of the head and the character of the insanity,—whether, in other words, the mapping out of the different organs for the intellectual and moral faculties be confirmed by anything that we can notice in special developments in the heads of the insane? Of the skulls in the collection of M. Esquirol, which were examined by a talented physician, M. Georget, one-half presented nothing remarkable; they appeared as regular, and as well-formed as in other circumstances of life. The other half presented peculiarities in the form, the regularity of the skull, and the thickness, density and organization of the bones that compose it. Some were unequally developed, one of the sides being larger and more arched than the other, and this was generally the right side. Some were twisted so that one side of the head was too forward, and the other too much behind. The cavities at the base of the skull likewise presented inequalities; those of one side being at times larger than those of the other. Lunatics with contracted heads have been observed to pass most readily into a state of dementia, and hence the frequent occurrence of such a shaped head in that form of insanity.

On this subject, the opinions of an eminent writer on mental diseases, Dr. Prichard, are forcibly expressed, and they are cited here, because they accord closely with the results of the author's own observations. "I have taken every opportunity that has occurred to me for many years of making inquiries of persons who had a great field of observation within their reach, what had been the result of their experience on this subject. Many of these persons have been physicians, who were physicians of extensive lunatic establishments. Some of them had been men who had addicted themselves to the study of phrenology, and were predisposed to imbibe the opinions of its authors; some have been persons distinguished by their researches in the anatomy and physiology of the brain and nervous system. Among them I do not remember to have found one who could say that his own observation had afforded any evidence favourable to the doctrine. Yet we should imagine that a man who lives amidst hundreds of monomaniacs must have constantly before his eyes facts so obvious that he could not be mistaken in their bearing. Some hundreds and even thousands of such persons have passed a part of their lives under the inspection of M. Esquirol, who possesses most extensive resources for elucidating almost every subject connected with the



history of mental diseases, and has neglected no inquiry, which could further the attainment of that object. The result of his observations will be allowed to be of some weight in the decision of this question; in which the appeal is principally to facts of the precise description of those with which he has been chiefly conversant. At his establishment at Ivry, he has a large assemblage of crania and casts from the heads of lunatics, collected by him during the long course of his attendance at the Salpêtrière and at the Royal Hospital at Charenton, which is under his superintendence. While inspecting this collection, I was assured by M. Esquirol, that the testimony of his experience is entirely adverse to the doctrine of the phrenologists: it has convinced him, that there is no foundation whatever in facts for the system of correspondences which they lay down between given measurements of the head and the existence of particular endowments. This observation by M. Esquirol was made in the presence of M. Mitivié, physician to the Salpêtrière, and received his assent and confirmation. M. Foville, physician to the extensive lunatic asylum at St. Yon, gave me a similar assurance. There are few individuals in Europe whose sphere of observation has been so extensive as that of M. Esquirol and M. Foville, and certainly there are none whose science and habits of observation better qualify them to be witnesses in such a subject of inquiry; but testimonies to the same result may be collected from unbiassed witnesses, whose evidence taken collectively may have nearly equal weight. Among these are men unscientific, though capable of correct and unprejudiced observation, as well as anatomists and physiologists. In the number of this latter is Rudolphi, who declares that he has examined many hundreds of brains without finding anything that appeared to him favourable to the phrenological theory."

**Treatment.**—In the earlier ages, when sound philosophy was but little cultivated, and every infliction of the kind now under consideration was esteemed one of the most awful dispensations of the Almighty, it was believed to set at defiance all attempts at explanation, and the best-directed efforts for its removal. Modern science and philanthropy have, however, afforded the most signal evidence of the inaccuracy of the ideas of our ancestors in relation to the curability of this disease. The experience of the insane institutions of the United States has been highly encouraging. In the asylum for poor lunatics at Worcester, Massachusetts, of the patients admitted during the year ending Nov. 30, 1835, whose insanity was of less than 12 months' duration, the recoveries were  $82\frac{1}{2}$  per cent.; and of the old cases, for the same time, only  $15\frac{1}{2}$  per cent. A more recent report of this asylum exhibits results still more gratifying. During the year 1839, there were admitted 418 cases of duration less than one year; of these there were discharged recovered, 340 cases, which is  $81\frac{1}{3}$  per cent. The deaths of recent cases being deducted, the per-centage will be  $84\frac{3}{4}$ ; "and if,"—adds the superintendent, Dr. Woodward, of Worcester, Mass.—"the recent cases, now in the hospital, which are convalescing or have been recently admitted, all of which have had insufficient trials, are deducted, the per cent. will be  $92\frac{2}{3}$ . Of all the patients, that have been in the hospital, the recoveries have been 41

per cent." In the M'Lean asylum, at Charlestown, in the same State, the ratio of recoveries in recent cases,—that is, of those not over one year's standing,—was, in 1837, 86½ per cent.: and of old cases, 38 per cent. These, however, can only be regarded as approximations,—by no means as a fair average of the number of cures. It is, indeed, difficult, from yearly reports, to arrive at any accurate statistical information on the subject. The published ratio of cures is generally higher than it ought to be, owing to the time being too short, to enable a correct judgment to be formed; and the patients being too often withdrawn or dismissed from the institution before they were wholly restored.

It is important to bear in mind the immense difference in the curability of insanity in recent and in chronic cases, which has been equally observed in other institutions than those mentioned, although not always in the same ratio. At the York West Riding Asylum, of 318 cases that had existed, according to Sir W. Ellis, from one to thirty years, only 26 were cured. Of 173 old cases, in the Bloomingdale Asylum, New York, in 1835, only 16 were restored; and it has been asserted by M. Esquirol, on the strength of accurate observation in some of the large insane establishments in France, that after the disease has passed the third year of duration, the probability of cure is scarcely more than 1 in 30. But although the ratio of cures diminishes so largely as the disease is more protracted, no case ought to be adjudged desperate. Many cases are recorded—and still more have not been recorded—of persons who have been esteemed incurably insane, and who have, notwithstanding, been restored to the full possession of their intelligence. One of a lady is given by M. Pinel, who had passed 25 years in a state of mania, and who suddenly recovered her reason; and another of a young girl, by M. Esquirol, who had been fourteen years in a state of dementia, and who, one morning, on rising, ran and embraced her mother, calling out, "Oh! mamma, I am cured!" The same distinguished observer states, that whilst he was at La Salpêtrière, a woman, who had been insane from the period of puberty, was suddenly restored at the age of 42—the critical period. Very few patients who are more than 60 years old when attacked, it would seem from the experience of M. Esquirol, recover; and the results of the greater part of inquiries show, that restoration is most frequent in youth, and less so as the age increases. Dr. Woodward, however, affirms, that in the Worcester Asylum, persons attacked with insanity after forty years of age recover in much greater proportion than those attacked before that age.

As a general rule, females would appear to recover in greater number than males. This is exhibited by the following table, drawn up by Dr. Pliny Earle. In the Bloomingdale Asylum, New York, the proportion of recoveries amongst the males, it will be observed, is much greater. This hospital, however, as remarked by Dr. Earle, receives many cases of delirium tremens, most of which are restored to health.

Asylums.	Time.	Men.			Women.		
		Admitted.	Cured.	percent.	Admitted.	Cured.	percent.
Hanwell, Penn Hospital, Bloomingdale, Massachusetts State Hos- pital.	1831 to 1840	1013	223	20-01	1016	226	22-24
	1841	103	15	14-56	73	15	20-54
	1821 to 1841	1692	848	50-12	906	352	38-91
	1833 to 1841	680	365	53-67	637	392	61-53
Total.		3488	1451	35-09	2632	985	35-80

But the efforts of philanthropy have not been confined to the restoration of those who are suffering from perverted intellect. Even the crétins and idiots have been subjected to treatment, and it has been found under the well-directed efforts of Dr. Juggenbuhl, founder and superintendent of the institution at Abendberg, in Switzerland, for the cure and education of crétins, that intellectual manifestations may, under appropriate management, become developed, the existence of which might never have been suspected. In other countries—in France and Great Britain—similar experiments on the idiotic are in happy progress. In an interesting letter from Dr. Conolly to Dr. Forbes, in the *British and Foreign Medical Review*, for Jan. 1845, p. 291, he thus refers to a visit made by him to the Bicêtre, a large insane asylum, at Paris. “The first part of the Bicêtre to which I was conducted was a school exclusively established for the improvement of these cases [the idiotic] and of the epileptic, and nothing more extraordinary can well be imagined. No fewer than forty of these patients were assembled in a moderate-sized school-room, receiving various lessons, and performing various evolutions under the direction of a very able schoolmaster, M. Séguin,\* himself a pupil of the celebrated Itard, and endowed with that enthusiasm respecting his occupation before which difficulties vanish. His pupils had been all taught to sing to music; and the little band of violins and other instruments, by which they were accompanied, was formed of the old almsmen of the hospital. But all the *idiotic* part of this remarkable class also sang without any musical accompaniment, and kept excellent time and tune; they sang several compositions, and among others a very pretty song written for them by M. Battelle, and sung by them on entering the classroom. Both the epileptic and idiotic were taught to write, and their copy-books would have done credit to any writing-school for young persons. Numerous exercises were gone through, of a kind of military character, with perfect correctness and precision.” “In all these cases,” he adds, “the crowning glory of the attempt is, that whilst the senses, the muscular powers, and the intellect have received some cultivation, the habits have been improved, the propensities regu-

\* M. Séguin is not a physician; but, instigated by M. Itard, he has devoted himself wholly to the education of idiots; and has lately (Paris, 1846) published an elaborate work on the subject.

lated, and some play has been given to his affections, so that a wild, ungovernable animal, calculated to excite fear, aversion, or disgust, has been transformed into the likeness and manners of a man. It is difficult to avoid falling into the language of enthusiasm on beholding such an apparent miracle."

The treatment of insanity may be divided into the *therapeutical* and the *moral*.

1. *Therapeutical treatment*.—The difficulty that exists in comprehending the precise pathological condition of the brain in insanity throws much obscurity on the treatment appropriate to even furious cases of mania. Still more obscurity must rest on the therapeutical management of those in which the disease has existed for any length of time. In these last cases, indeed, the efforts of the physician have to be mainly restricted to the adoption of moral means.

The most philosophical plan is to meet the pathological conditions as they arise; and, at the commencement of mania, when the patient is young and vigorous, with redness of face, strong and frequent pulse, and signs of cerebral hyperæmia or inflammation,—as well as in the course of the disease, should similar symptoms supervene,—general bloodletting may be employed with much advantage, and be pushed to such an extent as to decidedly affect the system. In the latter cases, the blood may be drawn by cupping or leeching on the temples or the nape of the neck. Many French practitioners advise the application of leeches revulsively to the anus or the thighs. The opinion was advanced, by Dr. Rush, that the evacuation of blood ought to be carried to a greater extent in madness than in any other acute disease whatever. From a patient, 68 years of age, he caused 200 ounces of blood to be drawn in less than two months. From another patient he took 470 ounces in the course of seven months, by forty-seven bleedings. This practice has at the present day, few—if any—advocates; and there are even some, who maintain, that bleeding of all kinds should be proscribed; but the course, above recommended, has been found by the author to be the most satisfactory. He has not bled because a patient was maniacal, but because the symptoms appeared to him to call for it. The same may be said of the recommendation, that bleeding should be practised on female lunatics at each menstrual period, whether the catamenia flow or not. An indiscriminate course of this kind might be very prejudicial; the cause of the exacerbations being, under such circumstances, inordinate nervous impressibility rather than high vascular excitement. It may be stated, moreover, as a remarkable fact, that in the Gloucester Lunatic Asylum, England, under the superintendence of Dr. Shute, and Mr. Hitch, the use of the lancet, leeches, cupping glasses, blisters, drastic purgatives, and the practice of shaving the head are totally proscribed; and yet recoveries take place in a large proportion, and no cases of sudden apoplexy or hemiplegia have occurred.

In cases where the organic actions are unusually excited, the head may be shaved—which of itself frequently tranquilizes—and ice may be applied in a bladder. In very severe cases, in addition to this, it has been advised to immerse the patient in a warm bath, twice or

thrice a day, and for two or three hours at a time. Whenever the heat of the head is very great, cold water or ice may be applied to it with advantage.

The new impressions, produced by the cold shower-bath or *douche*, or by the cold affusion to the surface, have been thought serviceable by many: but by others; the first of these meets with but little favour. The *douche* is certainly one of the very best tranquillizers that can be employed. A column of water of the size of the arm, or even much less, made to fall from a height on the head of the furious maniac, will almost always tame him. One of the most frantic cases, that ever fell under the author's care, was tranquillized by the column proceeding from the spout of an ordinary teapot, made to fall upon the head from the elevation of a few feet. The case of a young girl is related by M. Foville, who was placed in the bathing-tub with a garment over her, and water at 57° Fahrenheit was poured in small quantities on her head, till it covered her body, and shivering was induced. On repeating the application, tranquillity followed. On one occasion, violent shivering supervened on its use, when the patient was immediately put to bed, fell asleep, and copious perspiration ensued. On awaking, she was entirely tranquil, and her intelligence wholly restored. It is scarcely necessary to say, that these severe shocks are inapplicable in cases where the constitution is much enfeebled; and, in old cases, attended with a disposition to hyperæmia of the encephalon, their use has been esteemed questionable, owing to the danger of inducing paralysis, but it does not appear, that any such results have actually occurred. In these very cases, and, indeed, in all, warm bathing forms an excellent remedy, but it must be *warm* (about 91°), not *hot* (98° and upwards): the latter could scarcely fail to add to the vascular excitement.

As the revulsion induced by cold bathing is found serviceable, so may the different forms of revellents be prescribed with advantage. Blisters have been applied to the nape of the neck, or to the shaved head—the former being preferable; issues or setons have been placed in the neck; caustics and the actual cautery have been applied to the same part, or to the crown of the head; as well as counter-irritant lotions and ointments; and there are cases, which are adapted for their use; but the benefit derived from them, in ordinary maniacal cases, has not generally been striking, in the author's experience; and in this respect he finds it accord with that of many others. He has seen cases of monomania, however, in which the individual had sunk into a state of torpor and lethargy, where good results manifestly followed the employment of a blister to the nape of the neck, and of moxas to the temples. It is proper to add, that the practice of making an incision through the scalp, over the sagittal suture, and of inserting issue peas, with the view of establishing steady counter-irritation, has been employed—it is affirmed—for some years past by Dr. C. Evans, physician to the Frankford Insane Asylum, in the treatment of chronic affections of the brain, and with very satisfactory results.

The actual cautery, applied over the syncipital region, was highly

extolled by a veteran practitioner, M. Valentin; but it has given rise to unpleasant consequences. When applied to the nape of the neck, the effect—as might be presumed—was better. It was remarked, that whenever the patient experienced neither terror nor pain during the operation, it failed to produce benefit. In such a case, the alienation must, indeed, be extreme, and almost, if not wholly, hopeless. In the same cases, an ammoniacal paste has been advised by M. Gondret. It acts in the same manner as the revellents already mentioned.

The *Pommade ammoniacale* of Gondret is made by uniting two parts of *liquid ammonia*, with one part of *suet*, and one of *oil of sweet almonds*.

Amongst the revellents that are profitable in mania, cathartics have long held a conspicuous rank. The hellebore of Anticyra—now no longer used—exerted its remedial agency in this way. The practitioner must use his discretion as to the administration of cathartics. There are but few cases, however, of recent insanity, in which a brisk cathartic, given twice a week, may not be of service. Any of the ordinary cathartics may be prescribed—as jalap and calomel; rhubarb and calomel; sulphate of magnesia and senna; &c.; and if the patient be refractory, he may be deceived by mixing calomel with butter; or a few drops of croton oil with honey.

Emetics act, like cathartics, as revellents, and they have been employed by some practitioners in all cases of insanity. Where there is much tendency to encephalic hyperæmia, they should be given with caution, or not at all, as encephalic hemorrhage, it is asserted by Dr. Haslam, has supervened on their use. But where much torpor exists, and it is desirable to excite a new action, they may be given with positive benefit. The author has found much advantage from them in those cases. On the other hand, whilst it has been maintained, that their employment may be of use in cases of insanity, accompanied with disorder of the stomach, it has been affirmed, by Haslam, that after the administration of many thousand emetics to persons who were insane, but otherwise in good health, no benefit whatever was derived from them. It must be borne in mind, that here, as in the case of all remedies given to the insane, the dose must be large; and no better form can be prescribed than the ordinary combination of tartrate of antimony and potassa, and ipecacuanha.

R.—Antim. et potass. tartrat. gr. vj.

Pulv. ipecacuanhæ ðij.—M. et divide in pulv. ij.

One to be taken, and, if emesis should not follow in 20 minutes, the other.

When emetics are given as nauseants, the state of sedation, thus induced, is beneficial in the very cases in which full vomiting might be prejudicial, and is less adapted for those cases in which it has been seen that full emesis may be induced with benefit.

To the same class of therapeutical agents may be referred rotatory motion, which was recommended in ancient times, and has been revived in our own day. It is applied by the rotatory chair, or the rotatory swing, and by the effect it induces on the encephalon, and, through it, on the function of circulation, it produces a decidedly sedative agency, and may be had recourse to with advantage in the

cases referred to above, in which sedatives are proper. It is, also, one of the most effectual means of restraint in furious mania. Mercury, also, belongs to the class of revellents. It was highly extolled by a distinguished physician of this country, Dr. Rush, but it is rarely employed. He pushed it so far as to affect the system.

In a disease characterized by so much excitement of the animal functions, agents, that are calculated to act more especially on those functions, were naturally had recourse to. Opium was accordingly prescribed in large doses; and by some, as by Dr. Brigham, of Hartford, and Dr. Woodward, of Worcester, and, very recently, by Dr. Seymour, of London, it has been strongly recommended. The author has administered it in long-protracted sleeplessness, and, at times, with decided benefit. It requires, however, to be given in large doses—at least two and a half or three grains, in the form of pill; and this dose may be repeated should it be necessary. It has been asserted, that cerebral congestion has resulted—in those predisposed to it—from “a moderate dose of opium.” This might be the case: a small dose of opium differs, indeed, as much from a large dose, as any unquestioned stimulant does from an equally unquestioned sedative: it is a dose capable of inducing sedation that is indicated in mania, and, in protracted insanity it may be prescribed nightly for weeks, when it will generally give repose even if it should fail in inducing sleep. The preparations of morphia are well adapted for the purpose. Other narcotics—and especially hyoscyamus, stramonium and belladonna—have been substituted for opium, but they are not as effective hypnotics as the latter, which may be given in substance or in the form of the acetate, sulphate, or muriate of morphia, which are, with some, devoid of the exciting qualities that opium itself possesses. Camphor has been recommended by many, but no confidence is, at the present day, reposed in it. This, indeed, is what might have been anticipated. It was, at one time, supposed to be possessed of powerful narcotic properties even in small doses, but at the present day the supposition is generally regarded to be entirely gratuitous. Digitalis, from its action on the sanguiferous system, has been thought adapted to cases of high maniacal excitement, and it has been much given on the European continent and in Great Britain,—pushed to the extent of inducing vomiting.

R.—Tinct. digital. gtt. xlv.  
 Syrup. papaveris fʒiiss.  
 Aquæ fʒiv.—M.  
 Dose, a third part, three times a day.

Or R.—Digital. pulv. gr. xviii.  
 Glycyrrhiz. pulv. ʒss.  
 Syrup. q. s. ut fiat massa in pil.  
 xij. dividenda.  
 Dose, one, three times a day.

It is adapted for cases, in which there is, at the same time, hypertrophy of the heart; but on the insanity itself it has rarely, if ever, exerted any beneficial agency.

Since the recent introduction of the inhalation of ether, it has been administered in insanity, but not many cases have been recorded. M. Cazenave, of Paris, gave it to a female, who had rested neither night nor day for five months. It was the means of inducing tranquillity, without being followed by any injurious consequences. M. Jobert

also administered it in a case of simple insanity, with the effect of inducing sleep, and the temporary restoration of reason.

In intermittent insanity, cinchona, or the salts of its active principles, have been recommended; but these remedies have not been observed to have the same effect as in other intermittent affections. At times, in long-protracted insanity, it may become advisable to support the flagging powers of life by different tonic agents, aided by an appropriately nutritious diet. The author has never met with such a case, but the cold infusion of cinchona, or compound infusion of gentian; is calculated to effect all that any of the agents of the class of tonics can accomplish.

R.—Infus. cinchon. sine calore præ-  
parat. f ʒijss.

Tinct. cinchon. f ʒijj.

Syrup. aurant. f ʒijj.—M.

Dose, one third, three times a day.

Or, R.—Infus. gentian. comp. f ʒiv.

Syrup. aurant. f ʒij.—M.

Dose, one third, three times a day.

As regards the general paralysis which supervenes on mania, no treatment promises success. If the counterirritants, already mentioned, will not effect improvement, none is to be expected from any other agency.

It is scarcely necessary to say, that, throughout the whole disease, attention must be paid to the general health, and to the treatment of coexistent affections; on which, indeed,—as has been shown,—the mental aberration may occasionally be dependent. With many practitioners, the physical or therapeutical treatment is restricted to this. The arrest of accustomed secretions—as of the catamenia, and hemorrhoidal flux—as well as the disappearance of cutaneous eruptions, having been esteemed causes of insanity, these discharges must be restored if practicable, especially should there be any good reason to believe, that the encephalic disturbance has arisen therefrom. A case is related by M. Foville in which paralysis became complicated with madness in consequence of the suppression of an habitual hemorrhoidal discharge, and in which the application of a single leech to the hemorrhoids every day, for a month, was followed by a restoration of the flux, and the patient was cured. Having no true emmenagogue, our remedial efforts, in cases of amenorrhœa, must be guided by the pathological condition, which appears to have given rise to the suppression; and if we fail in restoring it, benefit may at times be produced from the topical loss of blood by leeches applied to the interior of the thighs, or by cupping on the loins, conjoined with the use of pediluvia and semicupia. The baths may be made exciting by the addition of salt or the flour of mustard.

2. *Moral treatment.*—In all cases of mania, it becomes necessary to adopt a system of appropriate seclusion or separation. It is now the universal sentiment among the informed, that no case of insanity can be as satisfactorily treated in a private house, no matter how well regulated it may be, as in institutions established for the purpose. The author well recollects how forcibly this conviction was impressed upon his mind by the *fatal* consequences of inevitable neglect, during the severity of winter, in a case, which was attempted to be treated at home, under the double impression, on the part of the family, that



the ordinary servants of the house would be able to attend to the sufferer, and that there was something revolting in sending a relative to a public institution, where neglect was *possible*, and where he would be deprived of those cares, which relatives—it is too often erroneously conceived—are alone able to bestow. There may be cases, indeed, in which the patient is attached to those about him, and has reason sufficient to prevent him from doing violence to any one. In such cases, much doubt may exist as to the propriety of removing him from home; but in the immense majority of cases, the maniac detests his nearest and dearest friends, and it becomes essential, both in respect to his recovery, and the safety of others, that he should be placed in proper confinement. In all cases, however, both of mania and monomania, regard must be had to the manifestations, in deciding not only whether the patient should be permitted to be at large, but whether total seclusion afford the best prospect of cure to the sufferer, and of safety to those around him.

In every well-regulated insane establishment, attention is paid to proper classification; the furious are always separated from the more peaceable; and the convalescents are allowed quarters of their own. The very violent may be subjected to total seclusion, and can, in general, be tamed by the strait jacket, which, however, ought to be employed as rarely as possible, and by the *douche*; and as soon as the state of violence has subsided, the restraints may be removed, every care being taken to anticipate a return.

For the banishment of chains, and for the modern salutary reforms in the moral management of the insane, humanity is mainly indebted to a distinguished philanthropist and physician of France, M. Pinel, who, about fifty years ago, had the hardihood to oppose the revolting management at that time universally in use in the insane institutions of Paris, and whose boldness, judgment, and philanthropy were crowned with a degree of success, which must have been as gratifying as it was astonishing to him. During the stormy times of the French revolution, in 1792, Pinel made the experiment, which has gone as far as any single circumstance to render his name celebrated amongst physicians, and amongst the benefactors of his race. In the course of a few days, he removed the shackles from fifty-three lunatics confined in the Bicêtre. An unexpected improvement, says M. Scipion Pinel, followed from a course previously thought impracticable, and even fatal. The furious maniacs, who monthly destroyed hundreds of wooden utensils, renounced their habits of violence; others, who tore their clothes, and rioted in filth and nudity, became clean and decent; tranquillity and harmony succeeded to tumult and disorder; and over the whole establishment, order and good feeling reigned.

It is now well established, that the insane should never be treated harshly: firmness and a perfect absence of everything like temper, on the part of the attendant, are indispensable, and rarely fail in tranquillizing the most furious and malevolent. In all cases of danger to themselves or others, the maniac and the monomaniac must be carefully guarded, and should never be trusted out of the sight of the keeper. But, it has been proposed and practised to abolish all per-

sonal restraint in the management of the insane, and the course is said to have been entirely effective. The plan is to substitute a rigid system of constant superintendence, of well-preserved classification, and of humane and effective practical management. It has been affirmed, indeed, by Mr. Hill, "that in a properly constructed building, with a sufficient number of suitable attendants, restraint is never necessary, never justifiable, and always injurious in all cases of lunacy whatever." Cases, in which the patients render their clothes and persons filthy, present considerable difficulty, but a warm bath is always ready, into which the patient is put and well washed, and the clothes are changed as often as becomes necessary. In violent cases, the patient is at times placed alone, in a room well aired and lighted, where there is nothing destructible, and is treated with all the kindness that can be bestowed upon him. Admitting, however, the practicability and efficiency of the system of non-restraint in a large mass of cases, it may be questionable, whether it be of universal application; and were it so, it can rarely happen, that establishments for the insane are so well provided with competent attendants, that corporeal restraint can be wholly dispensed with. The experience of the large insane institutions of this country has sufficiently shown, that it can be but seldom necessary. In a late annual report of the State Lunatic Asylum, at Worcester, the managers affirm, that chains have never been thought of, and the strait waistcoat or jacket has never been used; and the same remark, as to the strait waistcoat, is made by the directors of the Ohio Lunatic Asylum, in one of their annual reports. "If the patient," they observe, "is received in a furious state, he is placed in a lodge appropriated to such cases; or, if one is seized with a paroxysm of mania in the wards, he is immediately removed until the paroxysm subsides, and then returned to his former situation." "Such," they add, "is the effect of the system of treatment adopted here, that in the halls where from eighteen to twenty are admitted together during the day, no noise or violence exists, and with those, who a few weeks or days since were beyond ordinary control, order, peace, and decency of manner and language now prevail." In the Bloomingdale Asylum, New York, "it is long since there has been such a thing as a strait jacket in the establishment."

In every well-arranged institution the sexes are kept entirely separated; as well as the uncleanly and indecent, and those in a state of dementia or idiocy. The necessity for these arrangements will be self-evident to a judicious superintendent; and, as a general rule, it may be remarked, that the greater the number of divisions, the more satisfactory will be the treatment. Where the insanity is partial, or, if general, has been mainly removed, every kind of mental occupation that may prevent the insane ideas from intruding should be inculcated; for although insanity must be esteemed essentially a physical disease, it is not one which, after it has continued for some time, can generally be cured by such remedies as are known to remove ordinary physical excitement. The period soon arrives, when a judicious moral management is the main stay of the physician. By a proper classification, it will be found, that there are comparatively few, who are in-

capable of participating in labour or amusement. Every well-devised insane asylum ought, therefore, to be able to employ such of the patients as are fitted for the task in agricultural or horticultural labours; workshops should be provided, and employment, of some kind or other, be carefully adapted to each individual. The attention, which such occupations require, produces a moral revulsion, and prevents the topic of hallucination from recurring, or, should it recur, from wholly engrossing the mind of the lunatic. This is now so well understood, that in the different insane establishments, it is an object of anxious solicitude on the part of the medical superintendent, and the results have been most salutary. The reports of these institutions sufficiently testify to the interesting fact, that however perverted may be the reasoning powers, there are but few, who are unsusceptible of appropriate appeals when judiciously made. Fifty years ago, it would not have been credited, that numbers have attended public worship in the chapels of those institutions, and conducted themselves with the greatest decorum, who, in the halls, were noisy, talkative and profane.

The new impressions, produced by travelling, are productive of benefit in the same way, especially to the monomaniac; and exercises of all kinds—gymnastic, as well as those already mentioned—should be inculcated. Music has been extolled by some, deprecated by others. Where the patient is a performer upon any instrument, the permitting of the enjoyment may furnish, for the time being, an occupation to the mind; but caution is always needed in properly adapting the music to the individual; as there is danger of calling up some association, which may reproduce the morbid hallucination. Music is, indeed, asserted by some to have generally aggravated the symptoms.

The rules, laid down by M. Georget, for the mental management of the insane, are wise and applicable to most cases. *First*, Never to excite the ideas or the passions of the patients in the direction of their delusion. *Secondly*, Not to oppose directly their irrational ideas and opinions by reasoning, discussion, opposition, contradiction, pleasantry or raillery. *Thirdly*, To fix their attention on objects foreign to their delusion, and to communicate to their minds new ideas and emotions by varied impressions. All this, however, must be left to the discretion of the physician: for whilst he might, with much propriety, withhold from one labouring under religious insanity, any holy books and exercises, which might excite the insane idea, he may even find it advisable, with certain monomaniacs, to attract their attention to the subject of their delusion. A lunatic, according to M. Esquirol, fancied he could not suffer his urine to pass without the danger of producing a second deluge, but he was prevailed upon, by being told that the town was on fire, and that he could, in that way, save it from total destruction. Cases in which persons have fancied they had something alive within them, are said to have been relieved by being provided with a living animal, and persuading the patient, that it had been removed by some operation. A patient presented himself at the Hôpital St. Louis, stating, that he had a serpent in his belly. The attending physician, M. J. Cloquet, favoured the idea; procured a serpent, and, making a slight incision through the integuments, pretended that he

had extracted the reptile through it: the person was cured. The author has not been so fortunate. In two cases of the same sort, the hallucination has continued in spite of every attempt, although it was benefited for a time, by a deception similar to that practised by M. Cloquet; and in a third case in the Philadelphia Hospital, in which the female believed that she had been pregnant for years, and implored the author to open her abdomen and extract the fœtus, every endeavour was made to satisfy her that she had miscarried; pains were simulated by the electro-magnetic apparatus, and a fœtus, provided for the occasion, was exhibited to her as the result, yet the delusion persisted. According to the author's experience, when the hallucination has been violently removed in these cases, it has assumed some other form. The only chance of cure has been in gradual banishment of the delusion by appropriate and protracted mental revulsives.

It has been recommended by M. Leuret to administer the douche, in cases of monomania or partial insanity, whenever the individual dwells upon the subject of his delusion. Where, for example, he believes himself to be a Napoleon, it has been advised, that he should be placed under the bath, and that this course should be repeated until he ceases to make the assertion. This may do in some cases, by the revulsion it induces; but no permanent benefit can be expected from it generally. It may, indeed, merely cause the individual to conceal his hallucination; and, moreover, no decided advantage can result, unless the pathological condition of the encephalon can be, at the same time, removed, and this requires an appropriate and long-sustained treatment.

Relapses being extremely frequent, it is important, that the patient should not be exposed to any powerful mental emotion, and that he should be permitted to enter gradually into the scenes to which he had been habituated prior to his insanity.

The diet must be regulated according to the indications. No rules can be laid down. At times, obstinate lunatics positively refuse to take food. Solitary confinement, or the *douche*, or the rotatory chair will generally compel them to yield. If not, it has been recommended to inject soup or broth into the stomach through the nose by means of the stomach tube. Pressing firmly on the fossa immediately anterior to the meatus auditorius externus will generally compel the patient to depress the lower jaw.

The remarks, made above, apply equally to *Puerperal mania*, *Mania puerperarum acuta*, *Mania lactea*; Fr. *Manie puerpérale*; Ger. *Manie und Melancholie der Wöcherinnen*, *Wahnsinn der Kinderbetterinnen*, from which the patients are usually restored mentally, provided they survive the condition of the system—generally, one of irritation and consequent exhaustion—under which the disease arises. Bloodletting is discountenanced by all, unless under great signs of plethora and vascular excitement, and even then it should be practised with caution. Local bleeding, cold applications to the head, and sinapised pediluvia, with purgatives and emetics—especially where there is disorder of the digestive tube—and full opiates, constitute the

most approved treatment. Dr. Marshall Hall strongly enforces, as the "principal remedy," "an immediate, mild, but efficient and sustained mercurial course."

The diet should be moderately nutritious; and total seclusion at home under appropriate care is indispensable in the generality of cases.

## HYPOCHONDRIASIS.

SYNON. Hypochondria, Hypochondriacismus, Hypochondriaca passio, Affectio hypochondriaca, Morbus hypochondriacus, M. eruditorum, M. flatuosus, Hypercinesia gastrica, Malum hypochondriacum, Hallucinatio hypochondriasis, Dyspepsia hypochondriasis, Alusia hypochondriasis, Hypochondrism, Hypo, Low Spirits, Vapours; *Fr.* Hypochondrie, Maladie imaginaire, M. Anglaise; Affection vaporeuse, Vapeurs; *Ger.* Hypochondrie, Hypochondrische Uebel, Milzsucht, Rippsucht, Unterrippsucht, Unterknorpelsucht.

In strict propriety, hypochondriasis cannot be separated from mental alienation. It is unquestionably a form of monomania, and has been so regarded by several modern writers, although some are still disposed to class it with dyspepsia, with which it is undoubtedly often associated. Reference has already been made to cases of *hypochondriacal monomania*, in which the persons believed that they had living animals within them.

The great characteristics of hypochondriasis are—a constant dread of imaginary, and, at times, of most singular diseases, or the most melancholy forebodings, and painful attention to real diseases, under which the person may be suffering, and which are often of very slight moment. Of the former class are the dread of hydrophobia, which sometimes exists to a most painful extent,—the dread of cholera, *choleraphobia* as it has been termed, and of syphilis—*syphiliphobia*; the second when cholera is raging or has been expected to appear in any locality; and the third when a person has exposed himself to the infection of syphilis, and has especial cause for dreading the development of the disease. The author has already alluded to the distressing case of a professional friend, whose dread was beyond all bounds in consequence of having put his finger into the mouth of a hydrophobic patient, there being at the time an abrasion of it. The dread in this case amounted almost to hypochondriacal monomania.

A clerical friend, of most excitable imagination, applied to the author on one occasion, satisfied that he was labouring under rabies:—that he had the hydrophobia or dread of water, and was attacked with spasms when he attempted to swallow. He had not been bitten, but had been perusing a horrible detail in the newspapers, and subsequently consulted a medical work on the subject before he applied for the author's advice. Many singular examples of the *hydrophobic monomania*—as this variety has been termed—have been recorded. The following is stated by M. Dubois d'Amiens to be authentic. Two brothers were bitten at the same time by a rabid dog. One of them went to America, where he resided for twenty years. After this, he returned to his native country, and learning that his brother had died with every symptom of hydrophobia, his imagination was so affected that he died soon afterwards with the same symptoms. This case is, however, apocryphal.

The author, just cited, has referred to the head of *monomanie hypo-*

*chondriaque* what he terms *monomanie nostalgique*, but not with much propriety, inasmuch as the sufferer does not live under apprehensions in regard to his own bodily health, but sighs incessantly for the country whence he has been separated, and to which he apprehends he may never be able to return. The affection is unquestionably a form of monomania, but not of the hypochondriacal kind. The Germans well render *nostalgia* by the word *Heimweh*, which literally means "home-ache," and it is said to have been more frequently seen in the Swiss, who have left their native land, and whose every thought is bent upon regaining it. In a nation, migratory as the people of the United States are, this form of melancholy is rarely witnessed.

The symptoms of hypochondriasis are most diversified, and generally exist along with the healthy play of various functions. At other times, the digestive or other functions are more or less deranged, and immediately the fears of the patient overcome his reason, and he imagines the most trivial symptom to be of the greatest moment. Slight flatulence or distension of the stomach is, in his view, a positive sign of serious inflammatory or other mischief in that viscus. The smallest modification in the number of the evacuations from the bowels, or any change in their character, is the cause of the greatest anxiety; and the dread of some impending disease of a still more serious character, or of death, renders his existence miserable. "I have known a father," says Dr. Brigham, "in whom I could discover no disease, regardless of the sickness and approaching death of a child, constantly saying, that his own case was more severe and alarming."

**Pathological Characters.**—Morbid anatomy has thrown no light on the nature of hypochondriasis. Many appearances have been observed on the dissection of confirmed hypochondriacs, but none of them could be assigned as the cause of the morbid phenomena. They have been generally concomitant, and occasionally perhaps consequent. Moreover, all of them have been present without hypochondriasis. The disease is unquestionably encephalic, and it is in the encephalon that we ought to look for the morbid appearances.

**Treatment.**—This must be based on the principles laid down under MENTAL ALIENATION. At the commencement it must be mainly moral; but, at the same time, the patient's notions, in regard to his bodily diseases, must not be rudely contradicted. It is better, indeed, to appear to fall in with him, and to prescribe for their removal. Exercise in the open air, especially travelling exercise, with all the new impressions engendered by change of air, habits, and scenery, are to be recommended; and the different gymnastic exercises should be advised. The patient is generally disinclined to all exertion; and, if left to himself, would usually brood over his imaginary evils, and thus render his ideas more inveterately fixed, and consequently more difficult of eradication; but, by well-directed efforts, he may be made to go abroad, or to engage in harmless games, that give exercise to the body, and, at the same time, afford mental occupation and amusement; or in the pleasures of the chase, or of sporting, or of horticulture or agriculture. "As for the moral treatment of hypochondriasis," observes a writer already cited—M. Dubois d'Amiens—"we can give but

very general precepts: the treatment is properly a question of judgment on the part of the physician. Great tact, great penetration, are requisite to understand how to modify it to suit the different characters of patients. The physician is thrown almost wholly upon himself, and that instantaneously,—interrogated, as he often is, by hypochondriacs, on questions of the most delicate nature. It belongs only to the philosophical physician to treat cases of this nature; the materia medica, with all its pharmaceutical riches, is useless. It is the influence of a correct and adroit mind over one that is disturbed, suspicious, and irritable, which can alone exert any efficacy." It need scarcely be observed, however, that along with this moral treatment, due attention will have to be paid to any morbid phenomena that may occur in the course of the malady.

## CHAPTER III.

### DISEASES OF THE NERVES.

#### I. INFLAMMATION OF THE NERVES.

SYNON. *Inflammati nervorum*; *Fr.* Névrite, *Inflammation des Nerfs*, *Phlegmasie des Nerfs*; *Ger.* Nervenentzündung.

THE nerves of the body, like the neurine of the great nervous centres, are, doubtless, liable to attacks of both hyperæmia and inflammation; but of the symptoms of the former affection we know little. The following remarks will, therefore, be confined to the latter.

**Diagnosis.**—Constant pain is experienced, which is increased on pressure; and although it may be liable to aggravation, it does not occur in distinct paroxysms, like neuralgia. The pain may, likewise, be traced, by pressing along the implicated nerve; and the parts to which the nerve is distributed may be variously affected; muscles may be convulsed or paralysed; loss of vision and of audition may arise from inflammation of the optic or of the auditory nerve, &c. &c. Inflammation of the pneumogastric has been said to give rise to hooping-cough or to acute gastritis; but farther observations are necessary. Inflammation of the great sympathetic has been assigned as the cause or consequence of many affections,—as of obstinate vomiting, cholera, and other diseases of the alimentary tube, and of different parts of the economy; and this view has been founded on the appearances presented on dissection,—redness in the nerve itself or in some of its ganglions being perceptible; but, in other cases of the same disease, no such pathological appearances have existed. Here, again, fresh observations are necessary.

The disease may be either *acute* or *chronic*; and, after it has persisted for a time, it may terminate in neuralgia.

**Causes.**—Neuritis may be induced by external violence, as by bruises or puncture. Accordingly, it supervenes, at times, on surgical operations, as on bloodletting; but it may, likewise, arise from causes within the economy, which are inexplicable.

**Pathological Characters.**—A nerve, according to MM. Béclard and Gendrin, becomes red when acutely inflamed, but yellow, if the inflammation have passed to the chronic stage. It may likewise be swollen, indurated, or softened. At times, the neurilemma alone exhibits signs of inflammation; but, in other cases, the neurine itself has lost its usual characters, and presents the appearance of a small fleshy mass. Under such circumstances, a serous fluid or pus may be found infiltrated between the nervous fibrils. These are the appearances usually met with in neuritis and *neurilemmnitis*.

**Treatment.**—If the inflammation be very violent, it may be necessary to draw blood from the arm, or to cup or apply leeches along the course of the affected nerve, where this is practicable,—following up the bloodletting by full doses of narcotics and other sedative agents.



In chronic cases, revellents are demanded,—as blisters, or the ointment of tartrate of antimony and potassa, or the ammoniated lotions of Dr. Granville.

## II. NEURALGIA.

SYNON. Rheumatismus spurius nervosus; *Fr.* Névralgie; *Ger.* Nervenschmerz, nervöses Reissen.

Neuralgia or *tic douloureux* is one of the most painful diseases to which man is subject. It essentially consists of a more or less acute, exacerbating, or intermittent pain, seated in a nerve, and shooting along its ramifications; and, according to M. Valleix, the pain exists chiefly, if not wholly, in the most superficial portion of the spinal nerves, where it can be detected by pressure.

**Diagnosis.**—The pain, in neuralgia, generally occurs suddenly; but, at other times, a slight sensation of itching or of heat, or creeping or numbness is felt in the part, which gradually becomes more and more intense. At other times, again, the paroxysm of neuralgia is preceded by a feeling of coldness and numbness. The pain is commonly extremely acute and lancinating, taking place instantaneously, and extending along the nerves like an electric shock,—whence these pains have been termed, by Cotugno, *Fulgura doloris*. When the pain is at its height, it seems as if burning needles were thrust into the affected parts. After a time, the agony diminishes, and is alternately replaced by a sense of numbness, which remains until the pain recurs. Exacerbations and remissions of pain take place at intervals, until ultimately the suffering becomes endurable, which it scarcely was at the height of the paroxysm.

When a sensation of cold is experienced in the affected part, no depression of temperature is indicated by the thermometer, neither is there usually any sign of inflammatory action, or of hyperæmia in the seat of the neuralgia. When the affected nerves, however, are distributed to muscles, they are often agitated by slight contractions, which scarcely merit the name of spasms or convulsions. When the pain remains a long time severe, the heart and arteries sympathize, beating with more force than usual,—but this is the result of the suffering, and is no evidence of the co-existence of local phlegmasia. If, on the other hand, the diseased nerve be distributed to organs whose office it is to secrete, these organs have their functions augmented by the irritation; and the secretions accomplished by them are usually, under such circumstances, morbid. If the disease persist, the agitations of the muscles become permanent, so as to give rise to involuntary catchings, which the French term *tics*, whence neuralgia has obtained the name *tic douloureux*; and, under similar circumstances, there is a tendency in the secretory organs to have their secretion inordinately excited. At times, however, as in sciatica or femoro-popliteal neuralgia, the nutrition of the limb becomes affected; so that atrophy and paralysis are the consequence of the nervous derangement.

It is scarcely to be expected, that a disease, characterized by such violent pain, should exist for any length of time without affecting the general system: accordingly, the nutrition of the whole body often suffers;

rest is impracticable; digestion difficult, and, in the worst cases, the patient dies, worn out by constant irritation. These formidable cases are, however, rare. It fortunately happens, that the mass yield to time, or to the employment of appropriate remedies. Relapses are very common, until the force of habit has been overcome by a long freedom from an attack. When once sleep is obtained, the neuralgic pains appear to be suspended. "A person," says Sir B. Brodie, "suffering from tic douloureux in the face, may for a time be prevented from falling asleep, but, if once asleep, his sleep is likely to be sound and uninterrupted for many hours." Sir Benjamin adds, that although there may be exceptions to this rule, they are comparatively few. The same immunity generally exists during sleep in chorea, and it is said to be present, likewise, in the spasmodic wry neck, in which the involuntary contraction of some muscles drag the head awry. Persons affected with this deformity when awake have their necks flexible enough when they are sleeping.

The duration of the disease is uncertain. It may be transitory, or may last for months and years; cases are described, in which a fortunate result has supervened after the disease has persisted for ten or twelve years.

Neuralgia has various appellations, according to its seat. At one time it was supposed to affect the portio dura or the facial nerve very frequently; but the observation of physiologists, that this nerve is destined for motion, excited the attention of pathologists, to the subject, and it has been found, that it is really situate in the different branches of the fifth pair. Of 40 cases of facial neuralgia, according to Berlinghieri, two only were found to be affections of the seventh pair, and M. Andral regards them to be "*false neuralgia*." In these 40 cases, the disease was on the left side. It is proper to remark, however, that after the portio dura has passed through the parotid gland, it is associated with a twig of the fifth pair, which may, of course, be affected with neuralgia. *Facial neuralgia* is termed *frontal* or *supra-orbital*, *infra-orbital*, *maxillary*, *dental*, and *lingual*, according as the frontal, infra-orbital, superior and inferior maxillary or lingual branch of the fifth pair are implicated. The *infra-orbital* has generally received the name *tic douloureux*. It gives occasion, at times, to convulsive movements of the lower eyelid, cheeks, and upper lip, and to agony which is almost beyond endurance. *Dental neuralgia* is a form of toothache, but takes place without any caries of the teeth, shooting along the jaw and along the nervous ramifications, so as to induce the most horrible suffering. Neuralgia, at times, also affects the trunk, following the intercostal nerve, and hence termed *intercostal neuralgia*; and at other times, it is seated in the parietes of the thorax, hence termed *thoracic neuralgia*. Occasionally it attacks the female mamma—*mammary neuralgia*—so as to induce a suspicion of the existence of some cancerous affection; and one of the severest forms affects the nerves of the spermatic cord and testes, extending to the nates and thighs, and implicating the bladder so as to occasion frequent micturition. In *ileo-scrotal neuralgia*, the pain descends from the lumbar region along the psoas magnus to the scrotum. The nerves

of both the upper and lower limbs may be equally affected with this disease; but we more frequently observe it in the latter. *Sciatic* or *femoro-popliteal neuralgia* extends from the sciatic notch along the back part of the thigh to the ham, and thence, occasionally, to the foot; and, in a slight degree, it is not uncommon during pregnancy. *Femoro-pretibial neuralgia* commences at the crural arch, and passes along the inner portion of the thigh to the anterior part of the leg; and *plantar neuralgia*, which is less frequent than either of the two last, is limited to the plantar nerve. Hemicrania (q. v.) may be regarded as a variety of neuralgia. These are the varieties, that have received special names from medical writers; but it is obvious, that many more might be enumerated, were we to specify all the nerves, which from time to time are found to labour under it.

Neuralgia affects, at times, the skin, and has usually been confounded with pains of the nervous trunks, muscles, &c. By M. Piorry, it is referred to this head, under the name *dermalgia*. It frequently exists along with neuralgia of the nervous trunks, with *ramollissement* of the brain, or occurs in cases of inflammation of the spinal cord. Severe pain in the uterus is often, according to M. Beau, attended with dermalgia of the skin of the pelvis and thighs; and *clavus hystericus* and sick headache with a neuralgic affection of the skin.

The term *false neuralgia* has been assigned to pains along a nerve, or its ramifications, produced by some body compressing it; the pains terminating with the removal of the compressing cause. Thus, tumours in the pelvis may cause pain along the sciatic nerve. M. Andral attended a man who suffered agonizingly from neuralgia irradiating from the mental foramen. The disease was induced by syphilitic periostosis, and it disappeared as soon as the system was affected by mercury. "This," says M. Andral, "was one of the most beautiful results that I have ever witnessed."

**Causes.**—The causes of neuralgia are very obscure. Unquestionably, a predisposition to it, of the nature of which we are altogether in the dark, exists in certain individuals. It would seem, however, as might be anticipated, that persons of a highly impressible nervous system, from nature or from habit, are most liable to it. The disease is altogether neuropathic; for although some pathologists have considered it to be inflammatory in its character, all the phenomena described above are unfavourable to the belief, and indicative of a wide distinction between neuritis and neuralgia.

Neither very young nor old persons are often the subject of neuralgia. Some curious differences in regard to age are observable, as respects the different forms of the disease;—the infra-orbital more frequently attacking adults, and the femoro-popliteal the aged. The belief has been, that females are more liable to the disease than males, but this is scarcely established. Both sexes appear to be equally subject to neuralgia of the face, whilst sciatic neuralgia would seem to be more common in men than in women.

When the predisposition to the disease is strong, and especially when it rests on previous attacks, very slight causes are sufficient to excite it. A cold wind—especially when moist—and, at times, the

slightest breath of air passing over the face, may develop facial neuralgia of the most tormenting kind. Even the touch of the razor excites, at times, the utmost severity of suffering. In other cases, and in predispositions to other forms of neuralgia, exposure to damp and cold is, perhaps, the most common exciting cause. It must be admitted, however, that our acquaintance with both the occasional and predisposing causes of the disease is extremely limited, and sufficiently unprecise. It has been remarked by M. Andral, that it is generally allowed, that cold and moist countries are more favourable to neuralgia, wherever seated, than those which are mild and more free from humidity: and M. Andral adds, that he has seen the best effects from sending his Parisian patients on a journey to Italy. It is obvious, however, that the good effects may have resulted, in these cases, from mere revulsion—one of the most valuable agencies, which we can invoke in cases of neuralgia—rather than from the causes to which M. Andral ascribes them.

External injuries may give rise either to neuralgia or to neuritis. It has, indeed, been considered by M. Andral, that all such cases belong properly to the latter. The cicatrization of an old ulcer is said to have caused it; and when once it has been induced, the recurrence of the paroxysms is often brought on by mental emotions. It rarely happens that they give rise to it *de novo*. Some most distressing cases of neuralgia, induced by wounds received in battle and otherwise, are recorded; and frequently, the pain may be experienced in the sentient extremities of the nerves at a considerable distance from the injured portion of nerve. Hence the importance, where we can discover no cause of pain in the part itself, of looking for some possible cause of irritation in the trunk of the nerve, from which the part is supplied with nervous fibrils. In short, where the predisposition is marked, any corporeal or mental excitement or derangement may develop the disease.

Neuralgia, being periodical in certain cases, it has been presumed by Dr. Maculloch to be owing to malarious influence; and has been accordingly classed among malarious affections. The author has had no reason to adopt this opinion; although it can be readily imagined, that constant exposure to such emanations may heighten the impressibility of the individual, and render him, perhaps, more susceptible to the disease on the application of adequate exciting causes.

The cause of the neuralgia may be seated in the brain, the spinal marrow, or in the nerve affected.

**Pathological Characters.**—The evidence afforded by pathological anatomy in this disease is far from being satisfactory: "It is often," to use the language of a modern writer on this subject—Dr. Jolly—"negative, always equivocal, and never decisive." The affection is doubtless, owing to organic changes in the parts affected, as in the case of the various neuroses already described, but these changes are as yet inappreciable. By some, the appearances offered by neuritis have been depicted as belonging to neuralgia; by others, deductions have been drawn from a few facts, and, therefore, prematurely. Of

this character, perhaps, is the view of a recent writer, Mr. R. H. Alnatt,—that irritation of the sympathetic nerve is productive of the local mischief in nine cases out of ten in the expanded branches of the fifth, or rather the ganglionic nerves which accompany them. One has regarded the disease as dependent upon dropsy, or serous infiltration of the nerves; another has seen a varicose or distended state of the veins in the vicinity of the affected parts, whilst others have noticed the products of inflammation, of neuritis or neurilemmitis,—redness, augmented size of the nerves; softening, induration, &c.—and have referred all the phenomena to inflammation and its consequences,—thus confounding neuritis and neuralgia.

Cases of neuralgia of the head have been published, in which tumours were found in the brain; and other instances are recorded, in which the disease was connected with some morbid condition of the bones of the head and face. The late Dr. Pemberton, of London, who was in very extensive practice, and enjoyed a high reputation, was obliged to leave the active exercise of his profession, in consequence of his intense suffering from neuralgia faciei. He ultimately died of apoplexy; and, on examining his head, the os frontis was found unusually thick, and on the falciform process of the dura mater, at a little distance from the crista galli, a small osseous substance was discovered, nearly half an inch long, and almost as broad.

Small tubercles are occasionally found developed in the course of nerves, which give occasion to excruciating neuralgic pains, and may be caused by inflammation; but it can be readily understood, that they may—like many other morbid productions—be owing to nutritive irritation in the part without any of the evidences of positive inflammation being present. These *subcutaneous tubercles* are distinguished during life, by an examination of the part affected, when a small body of the size of about half a pea is felt under the integuments. A case of the kind, occurring on the thumb of a shoemaker, and probably from a puncture of his awl, which was cured at once, after years of suffering, by excision, is related by Dr. Marshall Hall.

In true neuralgia, no alteration, that can be at all esteemed pathognomonic, is to be expected in the affected part.

**Treatment.**—A vast variety of therapeutical agents has been employed in this rebellious disease, and in certain cases all have failed. This circumstance has given rise to empirical trials of the most heterogeneous and heterodox character. Being essentially neuropathic, and not inflammatory,—although at times with inflammatory complications,—the treatment must of course repose on agents that are adapted to modify the condition of the nerves, either locally, or by acting on the whole of the nervous system.

It can never happen, that general bloodletting can be required for pure or simple neuralgia; but signs of polyæmia may be present, which, as in other diseases, may render it expedient. Leeches and cupping may, however, be beneficial more by their revellent than their depleting action; and in all cases it must be borne in mind, that great loss of blood cannot fail to add to the impressibility, and may thus aggravate the neuralgia, or occasion a relapse if the attack have

passed away. M. Andral prescribed for a lady affected with neuralgia, the application of a certain number of leeches. From neglect, or other cause, the leeches were not applied until ten days afterwards. In the mean time, the pain had entirely disappeared: apprehensive, however, of a relapse, she applied the leeches, and at the moment of their seizing hold, the neuralgia returned with great intensity.

The various external agents that have been employed have been either soothing or revellent. In an affection characterized by so much nervous irritation, topical applications of a soothing or narcotic character are obviously indicated, and, accordingly, they have been largely employed. Warm, and cold applications, and vapour fumigations of water, have been extensively used where they could be made to come in contact with the parts affected; but preparations of narcotics have been found more efficacious. Washes and cataplasms, made of opium, or of the watery extract, or of the decoction of poppy heads, have, at times, afforded relief. A cataplasm of belladonna and hydrocyanic acid has been advised, as well as an ointment of the former.

R.—Extract. belladonnæ, ℥ss.  
Adipis suill. ℥ss.—M. et fiat unguentum.

In Germany, as well as in this country, stramonium is used in similar cases,—the warm leaves being applied to the part, or the powdered leaves made into a cataplasm.

Under the head of revellent topical applications may be classed the various liniments and other applications that have been employed in neuralgia. Although some of these have been partly indebted for their efficacy to the substances, narcotic or other, that have been associated with them, the friction has unquestionably exerted an excellent revulsive agency.

The external use of the cyanuret of potassium has been recommended of late years in some cases of facial neuralgia. It is used in the form of watery solution or of ointment, according to circumstances. The watery solution is of the strength of from one to four grains to the ounce of water; and the ointment is composed of from two to four grains of the cyanuret to an ounce of lard. By one writer, M. Lombard, it is considered that the soothing properties of the cyanuret are superior to those of any remedy known. Others have recommended the cyanuret in the proportion of four grains to an ounce of water as a local application in various forms of neuralgia. Aconitia, veratria, delphinia, and atropia, have also been advised, and the same remarks apply to all. When dissolved in alcohol, or made into an ointment or liniment, and rubbed, for a minute or two, on the skin, a sensation of heat and prickling is experienced, succeeded by a feeling of numbness and constriction of the part, as if a heavy weight were laid upon it, or as if the skin were drawn together by the powerful and involuntary contractions of the muscles beneath. This effect lasts two or three, and, at times, twelve or more hours, according to the quantity rubbed in.

R.—Aconitiæ seu delphiniiæ seu veratriæ  
seu atropiæ gr. i.—iv.

Alcohol. f ʒj.—Solve.

R.—Aconitiæ seu delphiniiæ seu veratriæ  
seu atropiæ gr. ij.—iv.

Alcohol. gtt. vj.

Adipis ʒj.—M.

The size of a hazelnut to be rubbed in.

R.—Aconitiæ seu delphiniiæ seu veratriæ  
seu atropiæ gr. iv.—viij.

Solve in

Alcohol.

Linim. sapon. aa f ʒss. fiat lini-  
mentum.

The mode of applying them is to rub a small portion over the whole seat of the affection, until the pain is either for the time removed, or until the full effect is induced on the cutaneous nerves; and the friction should be repeated three or four times, or more, during the day, according to the effect on the disease,—the proportion of the agent being increased at every second or third rubbing. Unless the peculiar impressions, described above, are produced, these agents seem to be devoid of influence on the disease. Tincture of aconite, rubbed on the part affected by means of a small piece of sponge tied on the end of a stick, continuing the friction until the requisite quantity of tincture is used, has been strongly recommended of late. One or two drachms of the tincture will generally be found sufficient.

To produce a joint anodyne and revellent agency, various combinations of narcotics and essential oils have been advised; but the one most commonly used, and which is capable of exerting all the beneficial effects of the class, is a union of opium with camphor liniment, which may be employed in the form of friction several times in the day, should any resulting relief encourage its continuance so long.

R.—Liniment. sapon. comp. seu Linim. camphoræ, f ʒiss.

Tinct. opii f ʒss.—M. ut fiat linimentum.

Of pure revulsives or simple counterirritants, almost every variety—perhaps every variety—has been used in neuralgia.

Blisters would obviously suggest themselves, and they have done service, but they are not thought equally applicable to all cases; and, in most of the forms of neuralgia faciei cannot be well applied near the seat of the affection. As, however, the use of pure revellents would appear to be more strongly exerted when they are applied so far from the seat of the disease as not to implicate the same vessels and nerves, the objection is not of much force, as they can be placed behind the ears. (See the author's *General Therapeutics and Materia Medica*, ii. 231, Philada. 1846.) Blisters, too, are serviceable in another manner. They prepare the way for the endermic use of narcotics; and, in this way, the salts of morphia may be employed so as to exert their agency;—one or two grains, or more, of either the sulphate, the muriate, or the acetate, being sprinkled upon the denuded skin, and repeated as the case may require. Recently, Messrs. Jaques and Castiglioni have advised, for the treatment of obstinate neuralgia, the direct inoculation of the nerve with narcotic substances. Three grains of the sulphate or acetate of morphia are dissolved in half an ounce of distilled water; and numerous punctures are made in the course of the affected nerve. Mr. Rynd relates two cases in which the acetate of morphia, in solution, introduced by means of punctures, was eminently successful. Ten to fifteen grains of the acetate were dissolved

in a drachm of creasote; so that the action was not simply that of a narcotic. In a case of inveterate facial neuralgia, the solution was introduced into the supra-orbital nerve, and along the course of the temporal, malar, and buccal nerves, by four punctures of an instrument made for the purpose. In the course of a minute, all pain, except that caused by the operation, which was very slight, had ceased. In another case, of sciatic neuralgia, the fluid was introduced by one puncture behind the trochanter, and another half way down the thigh. The patient was instantly relieved from pain. Should the pain return, the fluid must be introduced again. (*New Remedies*, 5th edit. p. 448, Philada. 1846.)

It is proper to remark, that many practitioners have recommended, that the various forms of counterirritants should be applied immediately over the affected nerves; and M. Valleix states, that the application of a succession of small blisters over the points in the course of the nerves, which are painful upon pressure, has produced great alteration of the symptoms, and has itself succeeded in effecting a cure. In this manner, the moxa has been prescribed—not used so as to excite an eschar, but merely rubefaction and inflammation of the skin. A good method of applying it in these cases is to take hold of the moxa with a pair of forceps, and place it so close to the skin as to excite pain and redness; then to move it onwards along the affected parts, so as to excite them in a similar manner.

Besides the moxas proper, it has been recommended to cut a piece of linen or paper of the desired size, immerse it in spirit of wine or brandy, and lay it on the part to be blistered,—care being taken, that the moisture from the paper or linen does not wet the surrounding surface. The flame of a lighted taper is then applied quickly over the surface, so as to produce a general ignition, which is exceedingly rapid; at the conclusion of the operation, the cuticle is found detached from the true skin beneath. This is a variety of the moxa, and is often very successful in relieving deep-seated pains of the neuralgic kind; but it is said by Dr. Granville to be attended with intense suffering. Another variety is the method of “firing,” recommended by Dr. Corrigan of Dublin and others, and described under PARTIAL PARALYSIS. The application may be made repeatedly should it be necessary.

The ammoniacal preparations of Gondret and Granville to which reference has been made already in this work, and at great length in another, (*New Remedies*, 5th edit. p. 205, Philad. 1846.) would seem to be preferable modes for exciting rapid counterirritation and vesication. The author has often used the lotions of Granville in the various forms of neuralgia, and especially in the “sciatic,” and with decided benefit. Their efficacy, in such cases, cannot indeed be contested, but they are apt to leave painful sores which heal with difficulty.

R.—Antim. tartrat. et potass. p. ij.  
Adipis p. viij. fiat unguentum.

\* The size of a hazelnut, to be rubbed on the part, night and morning.

Frictions with the ointment of tartrate of antimony and potassa have, also, been used, as well as with croton oil;—from 12 to 15 drops



being rubbed on the surface until it becomes red, and the friction being repeated twice a day or oftener.

These are the excitant topical applications which are most commonly perhaps employed, but it is scarcely necessary to add, that any of the ordinary excitants may be productive of the same results in different degrees. Rapid counterirritants are however most effective in such cases. Upon the same principle, electricity has been advised in the form of aura, sparks, and even shocks; but it is not much employed. More favour has been bestowed upon galvanism, especially when applied in the mode recommended by an English writer on epilepsy, Mr. Mansford. In cases of femoro-popliteal neuralgia, and, indeed, in various anomalous neuralgic pains, a portion of the cuticle, of the size of a sixpence, is removed by means of a small blister from the back of the neck as close to the root of the hair as possible; and a similar portion is removed from the hollow beneath, and on the inside of, the knee, as the most convenient places. To the excoriated surface on the neck, a plate of silver, varying, according to the age of the patient, from the size of a sixpence to that of half a crown, is applied, having attached to its back part a handle or shank, and to its lower edge—and parallel with the shank—a small staple, to which the conducting wire is fastened. This wire passes down the back, until it reaches a belt of chamois leather, buttoned round the waist; it then follows the course of the belt to which it is attached, until it arrives opposite the groin of the side on which we desire to employ it; it then passes down the inside of the thigh, and is fastened to the zinc plate in the same manner as to the silver one. The apparatus, contrived in this way, is thus applied. A small piece of sponge moistened in water, and corresponding in size to the blistered part of the neck, is first placed directly upon it; over this a large piece of the same size as the metallic plate, also moistened, is laid, and next to this the plate itself, which is secured in its situation by a strip of adhesive plaster passed through the shank on its back; another above and another below it. If these be properly placed, and the wire, which passes down the back, be allowed sufficient room that it may not drag, the plate will not be moved from its position by any ordinary motion of the body. The zinc plate is fastened in the same manner, but in place of the second layer of sponge, a piece of muscle, answering in size to the zinc plate, is interposed; that is, a small piece of moistened sponge, being first fitted to the exposed surface below the knee, the piece of muscle moistened, or—what the author has found equally effectual and less inconvenient—a piece of moistened flannel or soft buckskin or parchment follows, and on this the plate of zinc. The plates must be moved twice a day, and cleaned. Ample trial has been made of this plan in the various forms of neuralgia, both in public and in private practice. By Dr. T. Harris of Philadelphia, it was only found effectual in affections of the face, and, in these cases, it had to be persevered in for some time, before marked benefit was experienced.

There are, doubtless, cases in which the excitant and revulsive agency of galvanism may be employed with advantage, but they are not so numerous as was at one time believed. The author has used

the plates extensively in neuralgia, but he has not experienced so much success as to induce him to employ them frequently under the inconvenience that necessarily accompanies their use. They are, indeed, at this time, but little prescribed. Electro-magnetism has also been employed; and by Mr. E. S. Clarke, who applied it in the wards of Dr. Graves at the Meath Hospital, it was found to act more quickly in neuralgia than in any other disease. It removed some varieties in two or three applications; but others often required a feeble electro-magnetic current for many successive days.

Some years ago, an *anodyne metallic* or *galvanic brush* was recommended in cases of frontal neuralgia, from which excellent effects are described to have resulted. It consists of a bundle of metallic wires not thicker than common knitting-needles, firmly tied together by wire of the same material, so as to form a cylinder of about four or five inches long, and an inch or three-fourths of an inch in diameter. This is applied to the pained part, being previously moistened with a solution of common salt. It is not probable, that in this case galvanism is the agency concerned. Like the metallic tractors of Perkins, the effect is probably induced by the new nervous impression made through the excited imagination of the patient. In this way, also, the animal magnetizer, by his manipulations, exerts a salutary operation; and the mineral magnet is indebted for its efficacy to the same agency. It is generally on the diseased part, or around it, that the magnet is applied, and the application is made for a longer or shorter time according to circumstances,—being at times drawn along the nerves of the affected part, and at others applied in a more prolonged manner. Acupuncture and electro-puncture have been advised in the same cases, and good has, at times, resulted, especially in neuralgia of the extremities. Dr. Condie affirms,—and the experience of the author coincides with his,—that in several cases of neuralgia of different parts of the body, which, for a number of years, had resisted a variety of plans of treatment, almost immediate relief, and, in a few cases, permanent removal of the disease resulted from acupuncturation; but in other cases no benefit accrued from it. It has been argued, by Dr. Jon. Osborne, from the results of his experience of acupuncture, that neuralgia is a torpid state of the nerve. Electro-puncture or rather galvano-puncture has recently been much employed, and with success, in neuralgia faciei. A platinum needle is passed in towards the origin of the nerve, and another towards its termination. One is at times sufficient to remove the complaint; but if not, the positive pole of a galvanic pile may be connected with the former needle, and the negative with the latter. The relief has been often instantaneous.

The great object in the internal treatment is to allay the nervous erethism by the free use of narcotics. Their administration endermically has been already referred to, and when they produce unpleasant symptoms of narcosis, given by the stomach, they are occasionally administered in large doses by the rectum,—the enema, as a general rule, being made to contain three times as much opium as would be administered by the mouth.

Of the various narcotics, opium is unquestionably the best. They have all, however, been given,—belladonna, hyoscyamus, stramonium, conium, &c.

R.—Ext. belladon. gr. iij., seu  
 Ext. hyoscyam., seu  
 Ext. stramon., seu  
 Ext. conii ℥ss.  
 Potassii cyanur., gr. iij.  
 Aquæ f℥ij.—M.

Dose, five to ten drops, gradually augmenting.

A writer on neuralgic affections—Dr. H. Hunt—is most partial to belladonna. The largest quantity he has given has not exceeded one grain for three successive hours. Before the third dose is administered, he visits the patient, and when a decided check has thus been given to the pain, he finds that smaller doses keep both the pain and morbid irritability under control,—a third, a half, or a grain, once, twice, or thrice every day,—gradually diminishing the dose as the case improves. The patient is instructed to take a dose at any time when the pain threatens to return.

Many of the French practitioners extol the *pills of Meglin*, especially in facial neuralgia. They consist of a combination of a tonic with reputed antispasmodics and a narcotic.

R.—Oxid. zinci.  
 Ext. valerian.  
 — fumar.  
 — hyoscyam., aa. ℥ss. fiat massa in pil. xxxvi. divid.  
 Dose, one to four, a day.

Codeia has likewise been recommended, but it appears to possess no advantages over the other narcotics, whilst its price is enormous, the muriate having been sold in Philadelphia for no less than four dollars the drachm!

Whatever narcotic is used, it must be pushed so as to induce some of the signs of narcosis. When the decoction of the leaves of stramonium has been chosen, it has been advised to give it until it induces vomiting.

A tincture of Indian hemp—*cannabis sativa*—composed of 3 grains of the resin to f℥j. of dilute alcohol, has been administered in the dose of 45 drops to f℥j., at the commencement of the paroxysm of pain, in frontal neuralgia, and it is said with advantage. (*New Remedies*, 5th edit. p. 152, Philad. 1846.) Hydrocyanic acid, in various forms, has been advised, but its efficacy has not been marked; and of late cyanuret of zinc has been proposed, but much reliance is not placed upon it.

R.—Zinci cyanuret. gr. iv.  
 Confect. rosæ ℥ij.  
 Glycyrrhiz. pulv. q. s.—M. et fiant pilulæ lx.  
 Dose, one, morning, noon and night.

The internal use of veratria has likewise been advised, along with its external administration, as before recommended, or alone.

R.—Veratriæ gr. j.  
 Aq. destillat. f℥ij.—M.  
 Dose, a dessert-spoonful, in sugared water.

*Nux vomica*,<sup>a</sup> *strychnia*,<sup>b</sup>—and camphor, in the dose of one or two scruples in the twenty-four hours,—have likewise been given with occasional success, but their efficacy is not striking, and accordingly they are not much used.

<sup>a</sup> R.—Extract. nucis vomicæ alcohol. ℥j.  
Extract glycyrrhiz. ℥vij.—M. et  
divide in pil. lxxx.

Dose, two to six, two or three times a day.

<sup>b</sup> R.—*Strychniæ* gr. ij.

Confect. rosæ ℥ss.

Glycyrrhiz. pulv. q. s.—M. et divide  
in pil. xxiv.

Dose, one to two, twice a day.

When inhalation of ether was introduced, it at once suggested itself as a valuable agent to relieve the intense suffering; and, accordingly, it has been exhibited, with great success, in the paroxysms of various forms of the disease, by Messrs. Morris, Semple, Sibson, Menière, and Honoré, Lonsdale, Collen, and others. In all cases, however—as when ordinary narcotics are administered—the good effects can only be temporary; and every attention must be paid to the general treatment.

Being a disease—as has been remarked—neuropathic in its character, and characterized by excessive impressibility of the nervous system, agents which restore tone to the nervous system generally would seem to be indicated, and such appear to have been followed by the greatest success. Narcotics may palliate by affording relief during the paroxysm, but the prevention of subsequent attacks must depend on the influence exerted by remedies in the intervals.

The agent, of whose virtues against neuralgia we have the strongest testimony, is the subcarbonate of iron. It was at first highly extolled about twenty-five years ago, and several cases of cure, effected by it, were published. Since that time, numerous observers have testified to its beneficial action. The author has elsewhere alluded to one of the severest cases of neuralgia—under the form of hemicrania,—which he ever witnessed, and which rendered the patient's life miserable for years, that was entirely cured by the subcarbonate. It need scarcely be said, that where plethora exists, or febrile irritation supervenes, it must be removed; the subcarbonate, however, even in large doses, rarely disagrees with the stomach, and where it does, the inconveniences may generally be prevented or removed by the addition of an aromatic,<sup>a</sup> or the administration of a cathartic.

<sup>a</sup> R.—*Ferri subcarb.* gr. xxv.—xl.

*Pulv. cinnam. comp.* gr. x.—M. et fiat pulvis ter die sumendus.

Or,

R.—*Ferri subcarb.*

*Theriac. commun.* aa. ℥j.—Fiat elect.

Dose, a teaspoonful, three times a day.

The cyanuret of iron<sup>a</sup> has likewise been administered with the same view, as well as the different metallic tonics, the acetate, sulphate, and ammoniuret of copper; the oxide and the cyanuret of zinc, &c.; but they have not been found equal to the subcarbonate of iron.

<sup>a</sup> R.—*Ferri cyanur.*

*Sacch. alb. aa.* gr. xviii.—M. et divide in chart. iij.

Dose, one, morning, noon and night.

Mercury, as in all severe diseases, has been recommended in this. Whatever good effect has been induced by it has probably been in the way of revulsion. It may be pushed so as to slightly affect the mouth.

R.—Hydrarg. chlorid. mit. gr. xij.  
 Opii pulv. gr. iij.  
 Micæ panis q. s.—M. et divide in pilulas xij.  
 Dose, one, night and morning.

Some have supposed it to have a special action in neuralgia, but others have considered its beneficial agency to be restricted to cases in which the neuralgia has been dependent on syphilitic periostitis or exostosis.

The effect of the oil of turpentine in neuralgia is probably altogether revellent. It is given by some so as to act upon the bowels; by others, in smaller doses, to affect the kidneys. In both cases, it sometimes induces considerable renal irritation, to which its good effects are partly owing. The dose, as a diuretic, may be twenty or thirty drops; as a cathartic, one or two drachms in the twenty-four hours, either mixed with molasses or in the form of an emulsion.

R.—Ol. terebinth. fʒi.  
 Mucilag. acac. fʒiij.  
 Aq. menthæ fʒvss.—M.  
 Dose, a tablespoonful, three times a day.

Many cases are recorded of its salutary agency. M. Dubois d'Amiens, indeed, concludes—in the face, however, of all evidence—that there are scarcely more than two remedial agents, which can be regarded as possessed of any efficacy, oil of turpentine and the *pills of Meglin*. Creasote,<sup>a</sup> when it exerts any agency, probably also acts as a revellent. In some cases, great advantage appeared to be derived from it; but in others, and frequently, it was of no service.

<sup>a</sup> R.—Creasot. gtt. vj.  
 Mucilag. acac.  
 Syrup. aa. fʒij.  
 Aquæ fʒvss.—M.  
 Dose, a tablespoonful, three times a day.

Chlorate of potassa has, likewise, been given in neuralgia faciei, both as a curative and palliative.

R.—Potass. chlorat. ʒiss.  
 Aq. destillat. fʒiv.—Solve.  
 Dose, a spoonful, every two hours.

When the affection is markedly intermittent, and especially if it observe anything like regular periods of recurrence, it is most manageable, and may often be removed by the cinchona and its preparations, and other antiperiodics, given in the same manner as in an ordinary case of intermittent, and persevered in until all danger of a recurrence is over. The valerianate of zinc succeeded with M. Devay, when the ordinary antispasmodics and antiperiodics had failed. It may be given in the dose of a grain and a half in the twenty-four hours in the form of pill. Dr. Joseph Bell gives it in combination with the extract of hyoscyamus; and follows it up by gentle cathartics.

R.—Zinci valerianat. gr. ss.  
 Ext. hyoscyam. gr. ii.—M. et fiat pilula.  
 Dose, one, every eight hours.

In similar cases, arsenic, either in the form of arsenious acid, or of Fowler's solution, proves serviceable. It is the favourite remedy of Dr. Hunt,—who finds it act most favourably on those of lax fibre, languid circulation, cold and moist skin, and whose urine is pale and plentiful. In such, it not only relieves the pain, but gives general strength. Where the urine was high-coloured and scanty, with a sediment of lithate of ammonia, the tongue loaded, and especially its tip and edges red, he found it disagree, and aggravate the pain; but it was often useful when the visceral disorders, on which these symptoms depended, were removed.

It should not be given for many months in succession, but should be discontinued from time to time, as soon as any of its special effects on the system are discovered, and not be resumed until all evidences of its action have subsided.

In neuralgia of the face more especially—the cause of which has been considered by Sir Charles Bell to be seated primarily in the intestinal canal, and remotely in the fifth pair of nerves,—cathartics have been recommended, especially croton oil; and this, as well as other forms of neuralgia, would seem to have been removed by it,—doubtless by the revulsion it excites on the nerves of the intestines; but it need scarcely be said, that it possesses no specific virtue, as has been imagined by some. In the only case of genuine *tic*, in which Dr. Christison tried it, no benefit whatever was derived from it. (*New Remedies*, 5th edit. p. 481, Philad. 1846.)

Such are the chief internal remedies that have been employed in the various forms of neuralgia. The most efficient are tonics and narcotics; and of these, the most permanently beneficial are the former.

Of late years, a remedial agency has been proposed, which probably also acts by revulsion. In a case of intermittent neuralgia of the lobe of the right ear, given by M. Allier, a cure was accomplished by compressing the primitive carotid of the same side. Half an hour before the paroxysm, the compression was exerted, with interruptions of five minutes every quarter of an hour. The same person has reported a case of neuralgia of the orbito-frontal nerve; and, subsequently, of the nervus pudendus superior, respectively cured by compression of the carotid and abdominal aorta. The compression of the carotid of the affected side was continued for the whole forenoon, with pauses of five minutes every quarter of an hour. For the pudic neuralgia, the abdominal aorta was compressed for the space of three quarters of an hour. The neuralgia, in both instances, gradually ceased.

In extremely obstinate cases, especially of neuralgia faciei, it has been proposed, after other remedies have failed, to divide the affected nerves, and even to remove portions of them; but the former of these plans has often failed, whilst both have occasionally succeeded. Cauterization of the nerves has, likewise, been practised; but all these methods are extremely painful, and repugnant to the feelings. By

employing the agents already referred to, and continuing their use, and if one fails prescribing another, the perseverance and skill of the physician will often be crowned with success, when he might have been disposed to abandon the case as hopeless.

### III. PARTIAL PARALYSIS.

SYNON. *Fr.* Paralyse partielle.

Of the paralysis that arises from lesions of the nervous centres, and especially from hemorrhage, the author has already treated at some length. There are cases, however, of well-marked loss of muscular power, which afford no morbid appearances on dissection, and yet where—as in the case of nervous apoplexy—some inappreciable change must probably have occurred in the neurine of the nervous centres. Several such cases have been recorded by different observers. In many of these, the paralysis does not persist, but may disappear and recur in an intermittent manner: this can scarcely occur in the paralysis, which is dependent upon organic lesions. Occasionally, all power over the lower extremities is lost; and after the affection has endured for years, it may pass away, leaving the individual in perfect health. The author knew a case, in which a young lady was, for years, unable to move her lower extremities, or even to stand, and who was subjected, for a long time, to the usual excitant treatment employed in paralysis without effect, but who was perfectly restored apparently under the new evolution that took place at puberty. The paralysis wholly disappeared, sufficiently showing that it must have been a neurosis, and not dependent upon organic mischief in the spinal cord.

An affection of an analogous nature appears to prevail in India, and has been described by writers at different periods, under the name of *Barbiers*. It is said to commence with more or less lassitude, pricking pains, and sense of formication in both lower extremities, along with numbness, tremors, and irregular spasmodic movements in locomotion. Occasionally, the forearms and hands are affected in the same manner; and, at times, the spasmodic action extends to the muscles of the larynx and chest, so that speaking and respiration are executed with difficulty. As the disease proceeds, the lower extremities become more and more rigid; the knees are spasmodically bent, so that the legs are straightened with difficulty, and instantly relapse into the bent position, when the efforts cease. Gradually, the symptoms increase in violence, until, at length, the limbs become quite paralytic, much emaciated and contracted, and lose their natural temperature. The general health likewise suffers, and there is a loss of appetite, with indigestion, wasting, and general sinking of the vital powers,—the pulse latterly becoming weak, thready, or fluttering; and death, according to Dr. J. H. Bennet, takes place apparently from a gradual decay of the contractility of the muscular fibre.

The morbid anatomy—and, consequently, the pathology—of *Barbiers*, is imperfectly understood. It is a species of paralysis, but whether attributable to morbid changes occurring in the spinal cord, or in the extremities of the nerves, is not known. At the commence-

ment, the disease appears to resemble frequently chronic rheumatism; and, at a later period, paralysis from the poison of lead.

Similar affections appear to have been seen in other countries. *Beriberi* is an acute disease, characterized by paralytic phenomena, with dyspnœa and dropsical effusion. It, also, is prevalent in India.

Of the paralysis of the upper extremities induced by the action of lead, sufficient mention has been made elsewhere. (Vol. i. p. 164.) The effect—it has been supposed—is induced by the change produced by the metal on the muscular fibre. It is more probable, however, that it is exerted on the nerves distributed to the paralyzed part, or on the portion of the spinal marrow with which they are connected, yet it is strange, that those portions of the nervous system should be affected rather than others.

In this place, we shall inquire briefly into those cases of paralysis that are confined to small portions of the organism, to which they may remain restricted, or from which they may extend, so as ultimately to become general. Occasionally, it happens, that one muscle is paralyzed only; and, when this is the case, and there are no signs whatever of encephalic complication, the loss of power may be owing to pressure on the particular nerves that are distributed to the paralyzed muscle. Dislocation of the os humeri, by causing pressure on the circumflex nerve, has occasioned *paralysis of the deltoid*. Recently, the author has had a case of apparent paralysis of this muscle under his charge, but there was some reason to believe, that the patient was *malingering*. In many cases, however, the paralysis of a particular muscle may be a forerunner of serious cephalic mischief:—thus, the falling down of the upper eyelid, or the paralysis of one or more muscles of the fingers is at times a premonitory sign of apoplexy or of hemiplegia. In the *strabismus*, which is observed in advanced stages of encephalic disease, there is paralysis of one of the motor muscles; and *aphonia* appears to be produced, in many cases, by paralysis of the muscles, whose office it is to stretch the vocal cords. *Paralysis of the tongue* is a symptom of general paralysis, and may, indeed, occur alone, owing to pressure on, or some morbid condition of, the hypoglossal nerve. *Paralysis of the face* is not uncommon,—sometimes accompanying hemiplegia; but, at others, dependent upon a morbid condition of the nerves distributed to the face, or of the part of the encephalon, with which they are connected. The two nerves of the face, are the facial or portio dura, and the fifth. The former of these is far more frequently affected. Of late, two cases have been under the author's care, one of which was produced by mischief in the part of the encephalon, where the nerve originates, and the other by some source of irritation in the nerve, or by pressure upon it in its course through the aquæductus Fallopii. This nerve is one of motion and not of sensibility; consequently, when attacked with paralysis, the muscles of the face lose their motive power, but sensibility is not modified. The face is drawn towards the sound side, and the angle of the mouth carried higher, so that the mouth is oblique; the eyelids are opened widely, and the eye appears larger than the other. When the person laughs, it is altogether on



one side of the face—the sound side—so as to communicate a comical expression. Volition has, indeed, no power over the paralyzed muscles. Yet although particular muscles are paralyzed; others, that are supplied by the motor or manducatory branch of the fifth pair, execute their duties. Thus, mastication can be readily performed.

Facial hemiplegia is sometimes induced in the infant by pressure exerted by the forceps, employed for delivery, on the seventh pair of nerves. It ceases, however, spontaneously, in a period varying from a few hours to two months. Paralysis of the 7th pair, having been distinctly appreciated and described by Sir Charles Bell, is sometimes called *Bell's Palsy*. When the fifth pair of nerves is alone affected, mastication is impeded. There is command, however, over the muscles concerned in expression, and no evidence of distortion when the patient laughs. This form of paralysis is seen in hemiplegia, in which there is, along with the loss of power, impaired sensibility; the latter being owing to the morbid affection of the ganglionic portion of the fifth pair; the latter to that of the ganglionless portion. A case has been recorded of disease of the Gasserian ganglion, in which there was loss of sensibility on one side of the face, without the motility of the part being at all affected. In many cases the seventh and fifth pairs of nerves are implicated simultaneously.

*Paralysis* is not unfrequently met with in *infancy*. It has been seen as early as the third day after birth; but it is more common during dentition. At times, it implicates one half the body, and is manifestly dependent, in such case, on mischief in the opposite hemisphere of the brain. In other cases it is partial, and affects perhaps one upper extremity only. Frequently, the paralysis passes away, when it is topical; but when confined to one side of the body, it is rarely removed entirely; and often a second attack supervenes sooner or later, under which the patient sinks. If the disease be not speedily removed by the use of appropriate remedies, it usually becomes chronic, and the child sinks gradually in the course of a few months, or—according to Dr. Underwood—drags on a miserable life of ten or twelve years, with more or less debility of the arms or legs, but very rarely arrives at manhood. Many of these cases appear to be induced in a reflex manner, or—to use the language of Dr. Marshall Hall—eccentrically.

A deplorable condition sometimes exists, especially in aged individuals affected with diarrhœa, and which appears to be dependent upon *paralysis of the rectum*. The fæces are passed involuntarily, as it were,—the patient having no power over the sphincter.

Of the paralysis caused by lead, and that met with in the insane, mention has been made under Painter's Colic and Mental Alienation. Workers in mercury are, likewise, liable to paralysis of the voluntary muscles, so that articulation, mastication, and locomotion, are executed with difficulty, and the use of the hands is almost wholly lost. Similar results appear to be produced occasionally by arsenic, given to such an extent as to produce poisonous effects.

**Causes.**—Some of the exciting causes of paralysis are sufficiently evident. Thus, it has been shown, that it is induced by the action of certain poisons. Generally, pressure is exerted, either upon the part

of the nervous centres whence the nerve originates, or on the nerve itself. Mr. Charles Key has referred to cases, in which a thickening of the ligaments of the spinal canal had induced paraplegia. We not unfrequently, too, find it developed under the influence of accidents, or of diseases, which injure either the spinal marrow or the nerves. It would seem, also, that causes—as cold—acting upon the sentient extremities of nerves, may give occasion, not only to loss of power in the nerves of the part, but even to hemiplegia. A case has been referred to by Dr. Gerhard, in which hemiplegia followed the exposure of the part affected to a very cold wind: it was finally cured by strychnia. Various forms of paralysis may, in like manner, be induced by disease existing elsewhere—as in the bowels or kidneys; although it is not always easy to trace, whether these are, in all instances, the cause of the paralysis, or the effect.

In regard to the prognosis in various kinds of partial paralysis, it will depend greatly on the character of the morbid condition. If the nerves proceeding to the part be destroyed, no cure can be expected; but if there be merely a compressing cause, it may admit of remedy. Where the paralysis is dependent upon an affection of the neurine itself, this cannot always be diagnosticated, and, therefore, no sound prognosis can be given. The paralysis from lead, mercury, and arsenic, is commonly removable; but, at times, it resists all kinds of treatment. That caused by dentition sometimes passes away with the subsidence of the cause. In all cases, the probable result must be deduced from the nature of the morbid influence, and the length of time it has been in action. The longer the affection has continued, the less certainty will there be of entire restoration.

**Treatment.**—The treatment of hemiplegia and paraplegia—as well as of paralysis induced by the poison of lead—has been given elsewhere. In cases where there is no organic lesion in the central organs, Dr. Corrigan has recommended the employment of caloric by “firing”—as he terms it—along the spine, limbs, or other parts. The mode of application, employed by him, is as follows. The iron consists of a thick iron-wire shank, two inches long, inserted in a small wooden handle having in its extremity, which is slightly curved, a disk or button of iron, a quarter of an inch thick, and half an inch in diameter. The face of the disk is flat, not spherical, like the French ones. The button is held over the flame of a small spirit-lamp, keeping the forefinger about half an inch from the heated button. As soon as the finger feels uncomfortably hot, the button is withdrawn, and applied as quickly and as lightly as possible, at intervals of half an inch, over the whole of the affected part, bringing the flat surface of the disk fairly in contact with the skin. A whole limb or the back may thus be fired in a hundred places, if necessary, in a minute. By looking sideways at the spots touched by the iron, if the proper effect has been produced, the skin will appear first of a glistening white, and in a short time of a bright red. The efficacy of electricity, galvanism, and electro-magnetism, in cases of paralysis, has also been highly extolled. When the paralysis, as in lead-palsy, affects the hands chiefly, electricity was employed, by Dr. G. Bird, in the form of sparks drawn from the upper

part of the spine, "so as to exert its influence over the origin of the spinal nerves, forming the axillary plexus." In cases where the general health was not much deranged, the use of electricity over the spine, and drawing a few sparks occasionally from the paralyzed extensor muscles of the wrist and hand, with the exhibition of an occasional laxative, was, generally, remarkably successful.

Paralysis of the tongue may be treated by the use of excitant sialogogues—such as ginger, or pellitory of Spain, or horseradish; and, by trusting to the recuperative powers, for the removal of the cause of the paralysis, where this cannot be readily appreciated.

Aphonia, induced by paralysis of the intrinsic muscles of the larynx, may be treated by chlorine, or iodine, or the fumes of ammonia, in the way of inhalation. Professor Pancoast informed the author, that a case, occurring in a young lady, in whom there was but little voluntary power over the diaphragm, was cured by the inhalation of chlorine after the galvanic plates and the electro-magnetic apparatus had been used in vain. The chlorine may be inhaled from a common dish or inhaling apparatus, by dropping any of the acids on a mixture of chlorinated lime, so that the acid may be disengaged slowly. (See the author's *New Remedies*, 5th edit. p. 166, Philad. 1846.) In like cases, any of the sialogogues, mentioned above, may be chewed; and a modern writer strongly recommends the chewing of cubebs. With a similar view, blisters may be applied to the neck; or croton oil be rubbed over it. In one case, strychnia given internally was found of service: it may, also, be applied endermically;—a small blister being placed over the neck, and half a grain of strychnia sprinkled on the raw surface night and morning. In very obstinate cases, M. Trousseau has advised cauterization with the nitrate of silver.

In paralysis either of the portio dura, or of the fifth pair, blisters may be applied over the foramina whence the nerves issue; and the raw surfaces may be sprinkled with strychnia in the manner advised above; or moxas may be applied along the course of the diseased nerve. Electro-puncture—as directed under Neuralgia of the face, has also been extolled, and electric and galvanic currents have been made to pass from the root of the nerve towards its ultimate ramifications. The author has not met with a case, that has resisted this mode of treatment; but it is proper to remark, that observation has proved, that it may disappear spontaneously, and without the employment of any therapeutical agents. In the practice of one observer, M. Heidler, repeated emetics were found efficacious.

In cases, which are accompanied by any signs of encephalic or other hyperæmia, it may be necessary to cup over the region of the mastoid process, and to employ antiphlogistics so as to reduce the activity of the circulation, before the other revellents are had recourse to.

The paralysis of infancy requires a similar treatment to that of the adult; blisters, electricity in the form of sparks or of the electric aura, and feeble galvanic or electro-magnetic influences, when it is more general. When partial, and affecting one or more extremities, it re-

quires the same treatment as partial paralysis of the adult,—the energy of the agents being adapted to the age of the individual.

Paralysis of the rectum has yielded, in many cases that have fallen under the author's care, to blisters on the sacrum, dressed endermically with strychnia.

The treatment of Barbiers appears to be that required for paralysis generally; modified according to the particular indications that may present themselves.

## BOOK VII.

### DISEASES OF THE ORGANS OF THE SENSES.

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THE diseases of the organs of the senses are very numerous, and most of them have been referred to the domain of external pathology. A recent writer on internal pathology, M. Andral, includes in his work diseases of the skin only; yet they also are considered by many to belong to the surgeon rather than to the physician. The diseases of the eye now form, in many countries, a separate department—*Ophthalmology*—which occupies a teacher exclusively,—in several of the medical schools of Germany especially. The oculist and the aurist, likewise, pursue their special departments; and rank themselves amongst the surgeons, rather than the physicians.

As has been well observed by M. Rostan, the mere analysis of the *ex professo* treatises on ophthalmology, diseases of the ear, ophthalmology, &c., would far exceed the limits that could be assigned them in a general work on the practice of medicine.

The diseases of the different organs of the senses may implicate either the physical or the nervous part of the organ, or the organ of perception—the encephalon. Of the many disorders of the nerves of the senses, and their encephalic portion, frequent mention has already been made. It remains to treat of the diseases of the physical portions of the organs, and such local affections of the nerves as may not, thus far, have received attention. The different neuroses of the senses generally belong, indeed, to other diseases from which they cannot readily be separated.

## CHAPTER I.

### DISEASES OF THE EYE.

SYNON. *Fr.* Maladies des Yeux; *Ger.* Augenkrankheiten.

THE eye—it must be recollected—has three coats, and four refracting bodies. Of these coats, none of which pass over the transparent part of the organ,—the *sclerotica*, a fibrous coat, formed of the albugineous tissue of Chaussier, is the outermost. Into this coat are inserted the various muscles that move the eye; and it may even be regarded as formed by the expansion of their tendons. Immediately within this, and feebly united with it, is the *choroid* coat,—a vascular and nervous membrane. This is lined by the *pigmentum nigrum*, which is wanting, or very light coloured, in the albino. Within this, again, is the *retina*, a soft, thin, pulpy membrane, formed chiefly, if not wholly, by the expansion of the optic nerve.

The transparent parts of the eye are, from before to behind,—1, the *cornea*, at one time regarded as a prolongation of the *sclerotica*, but capable of being separated from it by maceration. 2, behind the cornea, the *aqueous humour*, occupying the space between the cornea and crystalline, and contained in its own serous capsule. 3, the *crystalline lens*, surrounded, also, by its capsule; and 4, behind the crystalline, the *vitreous humour*, invested by a delicate membrane—the *hyaloid*, which sends prolongations internally, that divide the humour into cells.

The *iris*, which gives colour to the eye, is seen separating the anterior from the posterior portion of the aqueous humour. By many, it is supposed to be a prolongation of the choroid; but it is rather a structure of a peculiar character;—according to some, muscular; according to others, essentially nervous and vascular; the nerves and vessels being distributed on an erectile tissue. In the centre of the iris is the *pupil*; which is dilated or contracted according to the diminished or increased size of the iris. As to the mode in which this modification of the size of the pupil is produced, much difficulty exists with the physiologist. The vessels and nerves distributed to it are ramifications of the ciliary,—the nerves arising from the ophthalmic ganglion and nasal branch of the fifth pair.

The essentially nervous portion of the organ is the retina, with the optic nerves, of which it is an expansion. By most physiologists, these nerves are considered to decussate wholly at what has been called the chiasma on the sella turcica. Others, however, believe, that no decussation occurs, whilst many of the best physiologists consider, that the decussation is partial, and concerns only the internal filaments of the nerves; that the other filaments pass directly on to the corresponding eye, so that one half of each eye is supplied by straight fibres proceeding directly from the root of the same side; the other half by those resulting from the decussation of the internal fibres. Thus, they

attempt to explain the anomaly of vision, called *hemioptia*, in which only one half of an object is seen. The author has elsewhere given his opinion, that in the present state of our knowledge, there is not simply a junction, but that the optic nerves really decussate at the sella turcica. (*Human Physiology*, 6th edit. i. 197, Philad. 1846.) Lastly;—there are certain accessory organs, which are often concerned, more or less, in diseases of the eye. The *eyelids* are formed, in part, of a loose cellular tissue beneath the skin, which admits of very ready infiltration, when the eye is inflamed. Lining the eyelids, and passing over the globe of the eye, is the *tunica conjunctiva* or *tunica adnata*, which is the most common seat of disease. It is a muco-serous membrane, and secretes a fluid, which, along with that furnished by the follicles to be described presently, and the secretion from the *caruncula lacrymalis*, constitutes the gum of the eye. At the very edge of the eyelids are cartilages called *tarsal* or the *tarsi*, in the substance of which are certain compound *follicles*, termed *Meibomian*, which are thirty or forty in number in the upper eyelid, and twenty-five or thirty in the lower; these secrete a sebaceous fluid, and are much implicated in one of the forms of inflammation of the eye. A similar collection of mucous follicles is seated at the inner canthus of the eye. These bear the name collectively of *caruncula lacrymalis*. They secrete a thick, whitish humour to fulfil a similar office with the secretion from the Meibomian follicles. The *caruncula lacrymalis* completes the circle, left imperfect by the Meibomian follicles of the eyelids, and the *lacrymal gland*, whose office it is to secrete tears for the purpose of keeping the *tunica conjunctiva* in a proper condition for vision, has its functions also materially modified by different pathological conditions of the eye. Thus, whenever the eye is inflamed or irritated, a copious secretion of tears takes place, owing to the irritation extending along the ducts of the gland to the gland itself. All these accessory organs are likewise liable to diseases, but these are not generally of much consequence.

Such are the parts, that are chiefly concerned in the diseases of the eye. Of the functions of the organ, the author has treated, at great length, in the work already referred to.

### I. INFLAMMATION OF THE EYE.

SYNON. Ophthalmia, Inflammatio oculi, Cauma ophthalmitis; Fr. Ophthalmie, Ophthalmite, Ophthalmie, Inflammation de l'œil; Ger. Augenzündung.

Modern ophthalmologists have made many and unnecessary divisions of ophthalmia. A modern writer, M. Most, has an *ophthalmia catarrhalis*, *O. rheumatica*, *O. morbillosa*, *O. scarlatinosa*, *O. variolosa*, *O. impetiginosa*, *O. scrophulosa*, *O. arthritica*, *O. venerea*, *O. menstrualis*, *O. hæmorrhoidalis*, *O. ex dentitione*, *O. neonatorum*, *O. senilis*, *O. scorbutica*, *O. Ægyptiaca*, *O. erysipelatosæ*;—from some fancied connexion between the inflammation of the eye and the condition to which the epithet generally applies; by others, an abdominal or venous ophthalmia has been admitted, which is supposed to be generally connected with visceral derangement.

On the whole, perhaps, it is most advisable to consider inflammation

as it affects the different structures of the eye principally. It may be confined to one only, but often extends to others; still, the diseased condition generally predominates in some one, and the others become successively implicated.

## 2. INFLAMMATION OF THE CONJUNCTIVA.

**SYNON.** *Inflammatio conjunctivæ, Conjunctivitis; Fr. Conjunctivite, Inflammation de la conjonctive; Ger. Entzündung der Bindehaut der Sclerotica und Cornea des Auges.*

Although in every variety of inflammation of the conjunctiva, the same structure is necessarily implicated, the phenomena presented are so different as to admit of several subdivisions.

### 1. *Simple Inflammation of the Conjunctiva.*

**SYNON.** *Ophthalmia catarrhalis, O. humida, O. serosa, O. purulenta mitior, Taraxis, Conjunctivitis catarrhalis, C. puro-mucoso catarrhalis, Catarrhal inflammation of the eye, Catarrhal ophthalmia, Catarrhal conjunctivitis, Cold or blight in the eye; Fr. Ophthalmic catarrhale; Ger. Katarrhalische Augenentzündung.*

This affection is rarely confined to the conjunctiva of the globe of the eye. It extends so as to affect both the eyelids and the Meibomian glands,—*Ophthalmococonjunctivitis* and *Blepharococonjunctivitis*.

**Diagnosis.**—One of the earliest symptoms of conjunctivitis is more or less pain and heat, with a sensation as if some extraneous body, as sand, were beneath the upper eyelid. These symptoms, with increased vascularity and more or less lachrymation, sufficiently indicate the disease. A writer—in American Notes to the Art. *Inflammation of the eye*, in Tweedie's "Library of Medicine"—affirms, that there exists no photophobia or intolerance of light, so long as the ophthalmia is simply catarrhal, and uncombined with scleritis; and he adds, that photophobia and lachrymation are almost pathognomonic of rheumatismal ophthalmia;—but this is surely calculated to mislead; for all agree, that intolerance of light and lachrymation are concomitants of almost all forms of ophthalmia. It would be strange, indeed, were it otherwise. They occur even when there is no inflammation, as from the reflection of the bright light of the sun from the surface of snow.

The vascularity is, at times, very great, the vessels being tortuous, and streaming from every part of the globe of the eye towards the cornea, where the vascularity ceases. As the disease advances, they form a kind of network over the eye, which can be easily moved on the subjacent textures by pressure with the finger. Occasionally, infiltration takes place into the submucous cellular tissue, so that small ecchymoses are perceptible. If the disease continues, the secretion from the conjunctiva is increased in quantity, and opaque and puriform; or, according to Dr. R. H. Taylor, it may remain transparent, and impart to the observer an appearance of unusual moistness of the eyes, and to the patient a sensation of glueyness. In the morning, the eyelids are generally glued together. Commonly, there is more or less pain over the eyes, and constitutional disturbance: but where the affection is mild, there may be no sympathetic irritation whatever.

By some, the catarrhal variety of inflammation of the eye is considered to be a severer form of simple conjunctivitis.

**Causes.**—The causes of this form of conjunctivitis are various. It



may be produced by irritants of all kinds; by exposure of the eye to a strong wind, to intense light or heat, or to dust. It prevails at times epidemically, and is a distressing endemic in our eleemosynary institutions, in which children are congregated together. At the Children's Asylum of the Philadelphia Hospital, it is often the cause of great anxiety to the attending physician; and, frequently, in spite of the best-directed efforts, leads to loss of sight. Its contagious nature has been admitted by many: and there are cases which it is difficult to explain upon any other principle. As in other diseases, however, that prevail endemically or epidemically, it is often extremely difficult to decide, whether the affection have been received by communication from a person labouring under it, or be owing to the patient's having been exposed to the same exciting causes. By many, according to Dr. Mackenzie, it is believed that the application of the puriform matter, secreted by the inflamed conjunctiva, when applied to a sound eye, may produce the disease, and in a form more severe, more distinctly puriform, and more dangerous in its effects upon the cornea, than the ophthalmia that gave occasion to it.

**Treatment.**—It need scarcely be said, that this active form of hyperæmia and inflammation requires energetic treatment. In the first instance;—the cause—especially if it be an extraneous body—must, if possible, be removed. The eyelids may be everted, so as to expose the whole extent of the conjunctiva; and if any foreign substance be there, it may be removed by the extremity of a probe, or be washed away with warm water thrown in through a syringe. Foreign bodies lodge, at times, beneath the upper eyelid occasioning intense pain. They may be easily discovered by everting it over a pencil, or any similar instrument placed along the orbital margin of the tarsus. When a foreign body—as a small particle of iron—has impinged upon the cornea, and penetrated a layer, or rested on the conjunctiva; at times, this may be removed by the magnet, by the point of a cataract needle, or by a very fine-pointed forceps; or it may be necessary to divide the outer layer of the membrane, so as to set it free; but if this cannot be done, without exciting much irritation, it has been recommended to wait until the extraneous body becomes loosened by ulceration.

Should the inflammation continue after the removal of the cause, and be at all severe, it will be advisable—as in other inflammations—to diminish the amount of the circulating fluid, by general bloodletting, and this may have to be repeated again and again, according to the urgency of the symptoms. It may be advisable, also, to take blood locally, by cupping, from the temples or back of the neck, in which case we have the joint effect of depletion and revulsion. Leeches may likewise be applied to the temples or to the cheek. Could they be placed immediately over the hyperæmic vessels, they might, by emptying them, produce excellent effects; but this is of course, impracticable. Leeching the eyelids has been proposed as a substitute, but this is a questionable measure, and has been so regarded by many therapeutists. The eyelids are too near the seat of the inflammation, so that the irritation from the leech-bites may extend to them, and augment

the mischief. Scarification of the conjunctiva is an excellent remedy, inasmuch as it divides the vessels that are implicated. It may be executed by the shoulder of a lancet, and one or two deep incisions may be made.

Along with bloodletting, general and topical, cathartics may be employed with great benefit. They excite a revulsion towards the intestinal canal, and are thus doubly beneficial as depletives and revellents. Where the constitutional and local symptoms run high, it may be advisable, also, to administer tartrate of antimony and potassa, so as to excite and keep up nausea.

R.—Antim. et potass. tartrat. gr. ij.

Mucilag. acaç. f ʒijj.

Aquæ f ʒiv.—M.

Dose, a tablespoonful, every three hours.

At a later period, when the activity of the inflammation has somewhat passed away, the repeated application of a couple of leeches to the septum narium of the affected side often affords essential relief.

In regard to topical applications, it will generally be found, that the warm and soothing are the best at the commencement of the inflammation, when the excitement of vessels predominates over the over-distended or atonic condition of the extreme vessel. Warm milk and water, or flaxseed infusion, or the infusion of the pith of sassafras will answer every purpose. A decoction of poppy-heads, or of the leaves of stramonium, has also been used, but it may be questionable whether it exert any great influence, otherwise than by the warmth. With these decoctions the eyelids may be fomented, and the steam from them may be allowed to enter the eye; but no force should be used to make the fluid come in contact with the conjunctiva.

When there is any purulent secretion from the conjunctiva, the eyes become glued together during sleep, and increased irritation may be induced by endeavouring to separate them. This may be prevented by pencilling the eyelids, on retiring to rest, with any mild ointment, or with butter from which the salt has been washed; but should this precaution not have been adopted, and the lids be united, the bond of union may be softened by the same ointment, or by washing the eyelids with warm milk and water.

When the inflammation is subacute, or the active stage has passed away, collyria, of a slightly excitant character, may be employed. Those, most commonly used, are solutions of the corrosive chloride of mercury,<sup>a</sup> nitrate of silver,<sup>b</sup> sulphate or acetate of zinc,<sup>c</sup> acetate and subacetate of lead,<sup>d</sup> sulphate of alumina,<sup>e</sup> &c.

<sup>a</sup> R.—Hydrarg. chlorid. corros. gr. i.  
Ammoniaë muriat. gr. iv.  
Aquæ seu Aquæ rosæ f ʒviiij.—M.

<sup>b</sup> R.—Argent. nitrat. gr. j.—iv.  
Aquæ destillat. f ʒj.—M.

<sup>c</sup> R.—Zinci sulphat. gr. i.—vj.  
Aquæ f ʒj.—M.—Or,

R.—Zinci acct. gr. i.—ij.  
Aquæ f ʒj.—M.—Or,

R.—Zinci sulphat.  
Plumb. acct. aa gr. vj.  
Aquæ f ʒj.—M.

<sup>d</sup> R.—Plumb. acct. gr. ij.—vj.

Aquæ f ʒj.—M.—Or,  
R.—Liq. plumb. subacct. gtt. xij.  
Aquæ f ʒij.—ʒiv.—M.

<sup>e</sup> R.—Alumin. gr. v.—xv.  
Aquæ f ʒiv.—M.

To be filtered, or used without shaking.

It has been objected to the solutions of a salt of lead, that when applied to the surface of the eye, they undergo decomposition, so that an insoluble precipitate of chloride of lead is thrown down, which attaches itself to any excoriated or ulcerated spot of the conjunctiva or cornea, adhering to it tenaciously, and on the healing of the ulceration, becoming permanently and indelibly imbedded in the cicatrix. Even Goulard water, applied to an ulcer of the cornea, is liable to produce a chalk-white, opaque cicatrix.

In certain cases of chronic ophthalmia, where astringents were indicated, Dr. Ruschenberger prescribed the watery infusion, dilute tincture, and watery solution of matico, and in every case with beneficial results.

An ointment of red precipitate<sup>a</sup> may also be applied by means of a pencil to the eyelids at the time of going to rest.

<sup>a</sup> R.—Hydrarg. oxid. rubr. gr. iss.

Unguent. cetacci, seu  
———— simpl. ℥iss.—M.

Or, R.—Unguent. hydrarg. oxid. rubr. ℥j.

———— cetacci seu  
———— simpl. ℥ij.—M.

Mr. Lane affirms, that in the external forms of ophthalmia, an ointment of oxide of silver, of the strength of a drachm to an ounce of simple ointment, often exerts a rapid influence.

A collyrium of chloride of lime has likewise been used with advantage.

R.—Calcis. chlorin. gr. iv.—vj.

Vin. opii gtt. x.

Mucilag. acac. f ℥iss.

Aquæ rosæ f ℥ij.—M.

A little to be dropped into the eye occasionally.

In long-protracted inflammation of the eye, when the vessels remain turgid, more powerful excitants are often needed. These may consist of the agents prescribed above, but in larger proportions. In one case, the author knew the inflammatory action disappear, on holding heated charcoal near the eye, as long as it could be borne; the caloric excited the over-distended vessels to contraction, so that they were restored to their former calibre, and thus the inflammation ceased along with the turgescence or hyperæmia that occasioned it. The *vinum opii* of the pharmacopœias has been found serviceable in similar cases,—two or three drops being introduced into the eye every morning, or every night and morning, until the redness disappears.

It is in the subacute, in the chronic, and in the later stages of every variety, that revellents—as blisters behind the ears or to the nape of the neck—are most markedly beneficial. The application of a blister, seton, or issue to the arm is often had recourse to, especially where the disease is apt to recur; and the revulsion, thus established, is often decidedly serviceable.

In *chronic* cases, it is advisable to examine frequently into the condition of the tunica conjunctiva lining the eyelids; and if they be rough and sarcomatous, it may be necessary to scarify the lining membrane, or to touch it lightly with the solid sulphate of copper, or the solid nitrate of silver.

Throughout the course of ophthalmia, especially if violent, the light should be totally excluded; or, if less severe, the eyes may be covered with a shade; and it is important, that both the sound and the affected eye should be protected from the light, as great consent exists between the two organs.

Many cases of simple inflammation of the eye are kept up by a peculiar condition of debility, without any important functional derangement. These are often greatly benefited by change of air.

## 2. *Purulent Inflammation of the Conjunctiva.*

SYNON. Ophthalmia purulenta, Blepharophthalmia, Blepharorrhœa oculi; *Fr.* Ophthalmie purulente, O. puriforme; *Ger.* Augenblennorrhœe, Schleimfluss der Augen.

Purulent ophthalmia occurs under three forms,—the two first, however, are in reality the same disease; and the third is merely produced by a specific cause;—*first*, the purulent ophthalmia of the adult; *secondly*, that of the new-born child; and, *thirdly*, the gonorrhœal; each of which may require a distinct consideration.

### a. *Purulent Ophthalmia of the Adult.*

SYNON. Ophthalmia purulenta epidemica, O. epidemica, O. Ægyptiaca, O. contagiosa, O. bellica, O. Asiatica, Blepharorrhœa oculi Ægyptiaca, Ægyptian ophthalmia or ophthalmy.

This serious affection, which has been the scourge of armies at different times, and which prevailed most disastrously in the British armies in Egypt about the commencement of the present century, is commonly considered distinctly by ophthalmologists, although it is regarded by some as merely an aggravated form of catarrhal conjunctivitis. Some idea may be formed of its ravages from the fact mentioned by Dr. Littell, of Philadelphia, of the British hospitals of Chelsea and Kilmainham containing, at one time, *two thousand three hundred and seventeen soldiers* totally blind in consequence of this disease; and of the French slaveship *Rodeur*, in which the disease made its appearance first among the slaves, one hundred and sixty in number, fifteen days after her departure from the coast of Africa; and subsequently spread among the crew, one sailor only escaping, and he was attacked shortly after their arrival at Guadaloupe. Of 25 persons composing the crew, vision was destroyed in 12, including the surgeon; five lost one eye, and four escaped with opacity of the cornea, and adhesion of the iris. Of the negroes who survived the voyage, thirty-nine were totally blind, twelve lost each an eye, and fourteen had corneal opacities.

**Diagnosis.**—The symptoms of purulent ophthalmia may not differ at first from those of the catarrhal form; but soon, a copious viscid secretion takes place from the inflamed conjunctiva, which is at first mucous, but afterwards decidedly purulent,—the eyelids are greatly tumefied, and their inner surface uniformly vascular. In very severe cases, the conjunctiva, covering the sclerotica, is so much tumefied as to form a *bourrelet* or ring around the transparent cornea, which, at times, scarcely permits the cornea to be seen. To this condition the term *chemosis* is applied. Owing to the like turgescence, the lower eyelid is occasionally everted, and the conjunctiva seen protruding;

but these are severe cases. Whilst the inflammation is confined to the conjunctiva, the pain may not be great; but as soon as it involves the deeper-seated parts, which do not readily admit of distension, it is at times excessive. Generally, it is felt chiefly in the orbit, and is of an aching, pulsative character, subject to occasional exacerbations. Under such severe irritation, the constitution sympathizes greatly, and there is often much fever; if the disease, too, persist for any length of time, the health always suffers. It is very liable to relapse, and even if resolution takes place, the inflammation may give occasion to various morbid conditions of the eye and its appendages,—as vascular thickening of the conjunctiva lining the eyelids, with enlargement of its mucous follicles, commonly called *granular conjunctiva*, opacity, sloughing, staphyloma of the cornea, or prolapse of the iris, or supuration and collapse of the eyeball.

Rupture of the cornea sometimes takes place during the violence of the pain. This may occur at an uncertain period from the commencement, and afford some relief; but, at other times, it does not even seem to check the progress of the disease. At times, the inflammation becomes chronic, and a thin gleet discharge or *blennorrhœa* takes place, with more or less pain, and a roughened condition of the palpebral conjunctiva, which may ultimately impair or wholly destroy vision.

**Causes.**—Purulent ophthalmia is not unfrequent in this country, but it never proceeds so rapidly, or passes to others with the same facilities as in warm climates. Opinions have differed materially on the point of its communicability; some—as already remarked—believing it to be merely an aggravated form of catarrhal ophthalmia, whilst others suppose it extends by specific contagion. Most writers, however, believe, that the morbid matter, applied to the sound eye of another individual, is capable of inducing the disease. Sentiment has varied and still varies in respect to its communicability by any emanation from infected eyes: some have denied this altogether; others believe in the affirmative; and others think it doubtful. It has been properly observed, however, that in practice, it is safest to esteem it contagious, and to avoid the employment of anything that would be capable of communicating the disease, just as if its contagious nature were wholly established.

**Treatment.**—The general management of this form of ophthalmia is the same as that of the catarrhal. It is important to subdue the inflammation as speedily as possible; and, accordingly, the lancet should be freely employed, and again and again, should the symptoms demand it; always bearing in mind, however, that the disease, if not overcome, may pass into the chronic form, and hence that the active powers of the constitution may be needed subsequently.

In regard to scarifying the swollen conjunctiva, discrepancy has existed amongst therapeutists,—some, as Mr. Mackenzie, advising deep incisions, others, as Mr. Lawrence, considering them improper in cases of acute ophthalmia, whilst others, as M. Walther, advise excision of large portions of the chemosed membrane, and others, as

Sanson, its entire removal, cauterizing the bleeding surface with lunar caustic in substance.

Leeches, cupping and cathartics may be employed here, on the same principles as in simple inflammation of the conjunctiva; and different revellents may be prescribed, after antiphlogistics have been used. The local treatment, during the period of active inflammation, must, likewise, be similar; but after the urgent state of excitement has been subdued, it will be advisable to employ more powerful topical excitants. It is in these cases, that solid nitrate of silver has been applied to the inner surface of the palpebræ every one or two days;—a solution of the nitrate being dropped occasionally into the eye in the interim.

R.—Argent. nitrat. gr. iv.—ʒj.—ʒij.  
Aquæ destillat. fʒj.—M.

Any of the excitant washes, before recommended under simple inflammation of the conjunctiva, may be, likewise, used in the interim. A collyrium of alum is often prescribed with this view.

R.—Alumin. gr. vj.—x.  
Aquæ fʒj.—M.

Dr. Radclyffe Hall has successfully employed a saturated solution of chlorinated lime in purulent ophthalmia both of the adult and child. The eyelids are slowly and gently separated until the cornea can be seen, when that is practicable, and all secretion is wiped away by means of a fine soft sponge. A large bushy camel's hair pencil, charged with the solution, is then insinuated beneath the upper eyelid, and swept around the front of the eye: the pencil is again charged with the solution, and applied to the everted lower lid. Unless plenty of the fluid is used, the application will be equally painful, but less effectual. There is considerable pain of a smarting, burning character, for half an hour or longer, and the already swollen eyelids become still more tumid and prominent. In a few hours, a serous discharge oozes out from between the eyelids, and the swelling partially subsides. This is followed by secretion of matter, but, after two or three applications of the chloride, in perceptibly diminished quantity, and the discharge gradually loses its characteristic yellow colour, and is seen in flakes on opening the eyelids. After three or more applications, the eyelids do not swell as they did after the first, and the pain is much less. The eyes are kept clean with warm water, matter never being suffered to collect beneath the upper eyelid; a little spermaceti ointment is smeared on the edges of the eyelids, and the strong solution is applied once in every twenty-four hours, until the secretion ceases to be in the least degree puriform. The longest period required for cure, according to Dr. Hall, has been a month; the shortest four days.

The ointment of red oxide of mercury may also be used in its officinal state, or reduced by lard, should it excite irritation. Various stimulating substances have been advised in protracted cases—as the undiluted *liquor plumbi subacetatis*, and the oil of turpentine. It is in such cases, that the *alum curd* has been advantageous.

R.—Aluminis pulv. ℥ss.  
Album. ovi.

Agitate them well, until a coagulum is formed; which may be applied on a linen rag.

A modern writer, M. Sonty, has found great advantage from this agent,—a few drops of the liquid being also dropped into the eye repeatedly through the day,—in some cases, every half hour.

In chronic *granular ophthalmia*, Dr. Hays, of Philadelphia, has found a saturated solution of common salt contribute more to the cure than any other application. Where the eye is irritable, with injection of the conjunctiva of the ball, and lachrymation, he knows of no remedy that affords such prompt and marked relief. The sulphate of copper, passed lightly over the affected parts, is also an excellent application.

When the pain is very intense, or suppuration has taken place, and rupture of the cornea is apprehended, it has been advised to puncture the cornea, and discharge the aqueous humour. This has frequently been done, and apparently with good effects. It has been advised, by some, to attempt an ectrotic method, by applying strong astringents to the inflamed membrane from the very first, especially where the inflammation is confined chiefly to the palpebral conjunctiva. In such case, nitrate of silver is, perhaps, the best agent that could be employed.

Should the affections occur in unhealthy or debilitated habits, sedatives may be inappropriate; and along with the local excitants already mentioned, it may be necessary to have recourse to quinia, iron, &c. Iodide of iron may be a useful preparation in such cases.

#### b. *Purulent Ophthalmia of new-born Children.*

SYNON. Ophthalmia purulenta infantum, O. neonatorum, Blepharophthalmia neonatorum, Blepharoblennorrhœa neonatorum, Blepharophthalmitis glandulosa, Lippitudo neonatorum, Blennorrhœa oculi neonatorum, Purulent Eye; *Fr.* Ophthalmie puriforme des nouveau-nés; *Ger.* Augenzündung Neugeborener.

This affection is generally seen within the first three or four days after birth, and may be caused by the contact of acrid secretions with the eyes of the child, in its passage through the parts of the mother, but this is not regarded, by M. Sichel, as a common cause. It may be induced by irritants of various kinds after the child has been born. The symptoms are essentially those of purulent ophthalmia of the adult,—a copious secretion of thick purulent matter, not unfrequently mixed with blood, extreme injection of the conjunctiva, chemosis, intolerance of light, and swelling of the eyelids.

The disease may be confined to one eye, but the author has more commonly seen both affected simultaneously. Generally it eventuates favourably; but, in severe cases, it may occasion loss of sight; either by depositions of coagulable lymph occurring between the layers of the cornea, or by ulceration of the cornea, or suppuration of the globe of the eye. If the cornea still retains its transparency, however violent the inflammation and profuse the discharge, the sight may be preserved, although the cure may be tedious, if the disease have been allowed to establish itself. If the effused matter has not had time to become organized, vision is occasionally restored in cases, where, says Dr.

Littell, from the extent of the opacity, recovery may have appeared quite hopeless.

**Treatment.**—The general principles of management are the same as in the like variety of ophthalmia in the adult. In slight cases, and it fortunately happens, that the generality of them are of this character, it may be sufficient to wash the eyelids with warm milk and water, and to apply a little simple ointment, lard, or butter from which the salt has been removed by washing, by means of a camel's hair pencil. It has been advised—as a preliminary measure—to ascertain distinctly the actual condition of the affected organ, and especially the progress, which the inflammation has made with reference to the transparent parts; but the irritation produced by the attempt has been to the author a striking objection; and, accordingly, he rarely strives to inspect the globe of the eye, and has never had occasion to regret his caution. The course, advised as the best for inspecting the organ, by placing the points of the fingers against the anterior edges of the tarsi, and pressing them firmly but gently backwards over the globe, cannot fail to prove more or less injurious; and moreover—as remarked by those who recommend it—is not always sufficient; for we are told by Dr. R. H. Taylor, that “if we fail in obtaining a view of the cornea, we must rest satisfied with what information can be obtained from the external condition of the lids, and the nature of the discharge, which issues from beneath them.”

The same lotions may be applied to the eye, as are advised in the forms of ophthalmia already considered; but they must, of course, have their strength reduced; and if the parts be turgid, scarification, with one gentle stroke of the lancet, may be practised on the hyperæmic vessels. Should there be a threatening of disorganization of the cornea, and, along with this, concomitant symptoms of want of tone, it may be advisable to administer tonics—as sulphate of quinia.

R.—Quiniæ sulphat. gr. iv.  
Syrup. simpl. f3ij.—M.

A teaspoonful, four or five times a day.

If the conjunctiva remain relaxed, it has been recommended, during the decline of the disease, to touch it daily with the *vinum opii*; or if it present a sarcomatous or granular appearance, to apply the solid nitrate of silver.

#### c. *Gonorrhæal Inflammation of the Conjunctiva.*

SYNON. Ophthalmia gonorrhœica, Blennorrhœa oculi gonorrhœica, Conjunctivitis blennorrhœica, C. gonorrhœica, Gonorrhœal ophthalmia; Fr. Ophthalmie blennorrhagique, Conjunctivite blennorrhagique; Ger. Augentripper, Tripperartige Augenentzündung.

This does not differ from severe forms of ordinary purulent ophthalmia, except by its violence, constituting the *hyperconjunctivite*, of M. Piorry,—and by the specific nature of its cause. The history of the case, alone indeed, indicates its character. It seldom attacks both eyes at once; and when it extends from one to the other, it is supposed to be from the matter of the eye first affected being applied to the other. There is no doubt, indeed, that the contact of gonorrhœal matter induces it; but it is more than questionable, whether it ever



arise metastatically, as has been said by some. Evidence is certainly wanting to establish the fact. A recent writer—M. Harion—states that he has observed in all cases of ophthalmia produced by inoculation of the mucopurulent urethral or vaginal discharge in adults, or in infants, that there exists, at the same time, an enlarged gland in front of the ear; and he has so much confidence in this, as a diagnostic sign of gonorrhœal ophthalmia, as to affirm, that ophthalmia, without such a glandular enlargement, is not gonorrhœal, even although the patient should be at the time affected with blennorrhagia.

Gonorrhœal ophthalmia is singularly violent and destructive,—generally terminating, in spite of every care, in ulceration, sloughing or opacity of the cornea, or by suppuration, bursting and collapse of the eyeball, obliteration of the anterior chamber, and flattening of the eye, staphyloma, prolapsus of the iris, obliteration of the pupil, &c., &c.

**Treatment.**—As already remarked, success may not follow the best-directed efforts. The treatment, however, must be the same as in severe cases of purulent ophthalmia in the adult—antiphlogistic measures pushed freely, blood taken both generally and locally, and the use of the solid nitrate of silver at a very early period; as soon, indeed, as the different antiphlogistics have been employed in rapid succession. No time is to be lost; and if the nitrate is to be of benefit, it must be applied early.

A milder form of gonorrhœal inflammation of the conjunctiva has been described by Mr. Lawrence, which readily yields to the astringent plan of treatment, and rarely requires antiphlogistic measures, unless in patients of a full habit.

### 3. *Strumous inflammation of the Conjunctiva.*

SYNON. Ophthalmia serophulosa, Serophulous or strumous ophthalmia, Conjunctivitis serophulosa, Phlyctenular Ophthalmia; *Fr.* Ophthalmie serophuleuse; *Ger.* Serophulöse Augenentzündung.

Serophulous ophthalmia is not uncommon, although by no means so often met with in this country as in Great Britain, where nine-tenths of the cases that occur in early life are supposed to be of this character. Like serophula itself, this form is most common in childhood. It is seated primarily and essentially in the conjunctiva and Meibomian follicles; whence, like other varieties of conjunctivitis, it may spread to the sclerotica, the iris, or the cornea.

**Diagnosis.**—In this variety, the conjunctiva is not so vascular as in the catarrhal or purulent forms; the redness is often indeed confined chiefly to the tarsi and the conjunctiva lining the eyelids; yet there is great dread of light and lachrymation, so that the child is afraid to open the eyes, and every attempt to examine them is attended with spasm of the orbicularis muscle, and a copious secretion of tears. The injected vessels generally direct their course to the margin of the cornea, over which they pass, terminating towards its centre; and, at their extremities, small pimples containing a clear or yellowish fluid form, which soon burst, and a small infundibuliform ulcer results. These pimples are occasionally seen, also, where the sclerotica joins the cornea. The degree of pain is not often great whilst the eyes are

shaded from the light, but should the inflammatory phenomena be considerable, it is frequently urgent, especially during the night. The secretion from the eyes, in passing over the cheeks, gives occasion to redness of the integuments, and the nostrils are often greatly irritated. Along with these local symptoms, the constitution may be more or less affected; and there is especially gastric or intestinal irritation. Towards evening, especially after sunset, considerable remission of the symptoms take place, which had been aggravated during the day,—a phenomenon, which, according to Dr. Taylor, is not observed in any of the other forms of ophthalmia. This variety is more insidious than those already considered; and, not unfrequently, changes take place in the transparent tissues, before any danger to the organ is apprehended. All the organic lesions that succeed to the other varieties may equally supervene in this. It may terminate in ulceration of the cornea, opacity from thickening of the pustule, or from interstitial deposition; adhesion of the iris to the cornea, staphyloma, &c. The disease is very liable to relapse from slight causes, and it is affirmed, that frequent and long-continued attacks generally leave the eyes in an imperfect condition, and predisposed to become amaurotic, from causes, which might have been applied with impunity under other circumstances.

Under the name *Pustular ophthalmia*, a form of strumous inflammation of the eye has been described, which differs, in some respects, from that just noticed. It is characterized by the formation of pustules, generally of considerable size, which are filled with a yellow opaque matter, and are usually seated a line or two distant from the margin of the cornea: these burst, and are converted into broad elevated ulcers. It is often combined with catarrhal conjunctivitis. The intolerance of light, in simple cases, is generally slight; and the spasmodic contraction of the orbicularis, so frequently seen in ordinary strumous conjunctivitis, is never observed. The subjects of it are generally children of a somewhat advanced age, or young adults. It is not attended with danger to the transparent parts of the eye, and generally yields readily to simple treatment.

**Causes.**—The predisposition is the strumous diathesis. The exciting causes are those of conjunctivitis in general. It is not an uncommon sequel of eruptive fevers and hooping-cough.

**Treatment.**—Scrophula being—as elsewhere shown—an imperfect condition of the system, it can scarcely happen, that powerful antiphlogistic measures are needed in this manifestation of it. Even local bloodletting is rarely required. Cathartics are almost always advisable, and, throughout the affection, attention may be required to the condition of the alimentary canal. After the action of cathartics, tonics are often found highly serviceable. An eminent writer on diseases of the eye, already cited, Mr. Mackenzie, strongly recommends the sulphate of quinia. “In most of the little patients”—he remarks—“to whom I have administered the sulphate of quinine, it has acted like a charm, abating commonly in a few days the excessive intolerance of light and profuse epiphora, promoting the absorption of phlyctenulæ, and hastening the cicatrization of ulcers of the cornea.”

By some, it has been advised to administer mercurials so as to affect the mouth; but the policy of this course is questionable in every form of scrophulosis; and, besides, mercurial ptyalism in young children is often extremely troublesome, and attended with disagreeable results. The preparations of iodine are preferable: almost every form, indeed, of revulsion is beneficial;—hence counterirritation, by means of blisters behind the ears and between the shoulders, renewed at intervals, is an excellent remedial agency. After the disease, too, has persisted for some time and remains stationary, great advantage is often derived from change of air. In cases of pannus, and long-continued chronic ophthalmia, attended with granular lids, &c., where the constitutional powers have fallen below par,—in fact, in all cases of strumous, and other conditions in which tonics and nutrients are indicated, Mr. Wilde, of Dublin, has found codliver oil a most useful remedy.

A light nutritious diet should be enjoined throughout the whole course of the disease.

In regard to local agencies, scarification of the eyelids may, at times, be practised with advantage. Hot fomentations generally afford considerable relief; and warm bread and water poultices during the night are extremely soothing. In other cases, the various astringents and gentle excitants, advised in simple inflammation of the conjunctiva, may be used as collyria,—especially the solution of nitrate of silver, and, according to some, the *vinum opii*. Should ulcers exist on the cornea, the finely-pointed nitrate of silver may be applied; or a stronger solution of the nitrate of silver, by means of a camels'-hair pencil. The ointment of red precipitate, before advised, or an ointment of creasote may also be applied to the edges of the eyelids at bedtime.

Hydrocyanic acid has been used with advantage in such cases, especially where there is engorgement of the conjunctiva, as a collyrium.

R.—Acid. hydrocyan. gtt. ij.

Aquæ fʒij.—M.

A little to be dropped frequently into the eye.

Iodide of zinc has likewise been advised.

R.—Zinci iodid. gr. xv.

Aquæ destillat. fʒvj.—M.

It has been recommended to apply the solid nitrate of silver to the eyelids. A clean stick of the nitrate, having from one to two inches exposed, is selected; the patient's eyelids are closed, and put slightly on the stretch, by applying the thumb of the left hand to the eyebrow, and gently raising the skin: the nitrate, moistened, is then to be passed over the whole surface of the skin of the upper, and subsequently, of the lower eyelid, two or three times, smoothly and without much pressure, bringing not the point, but the sides of the stick, in contact with the skin. The object is only to blacken—not to occasion any severer effects. In this manner, it is affirmed, the sensibility of the fifth pair of nerves is diminished, and the lachrymation and photophobia are relieved. Singularly good effects are stated, by Dr. Furnivall, to result

from painting the palpebræ of the affected eye with the tincture of iodine, pure or diluted.

It is not necessary, in this form of conjunctivitis, to keep the patient in a dark room. It is generally sufficient to direct a broad green shade; and exposure to the air, when the weather permits, is always of benefit. In cases of *vascular speck*, which is an opacity of the conjunctival layer of the cornea, with red vessels running into it, the removal of a portion of the enlarged vessels, which supply it, is one of the best means for arresting its progress.

The pustular form of strumous conjunctivitis, before alluded to, may be treated by touching the pustules or ulcers daily with solid nitrate of silver, or a strong solution of it. This generally proves sufficient: where it does not, it has been advised to give the subcarbonate of iron, in the dose of ten to twenty grains daily.

#### 4. *Variolous Inflammation of the Conjunctiva.*

SYNON. Ophthalmia variolosa, Variolous ophthalmia; *Fr.* Ophthalmie varioleuse; *Ger.* Variolöse Augenentzündung.

Variolous pustules may form upon the conjunctiva as upon any portion of the cutaneous surface. Such, at least, is the common opinion; but it is not the view of some observers, who consider that the eye suffers, in small-pox, from common inflammation merely, although of a very severe form. Of course, the most dangerous position is over the corneal layer. The pustule appears, at first, in the shape of a small white point, which gradually becomes elevated and yellow; and, in spite of every care, vision may be either wholly lost; or impaired by opacity or ulceration. Where suppuration or sloughing of the cornea occurs, it may be followed by the various lesions of the eyeball, more than once referred to.

Sometimes *secondary variolous ophthalmia* occurs at the time when the pustules are disappearing from other parts of the body. It is milder than the variolous conjunctivitis above described, but still may be attended with mischief. It seldom, however, terminates in destruction of the cornea: opacities are much more likely to be left. The period of the attack varies from two to six weeks after the apparent termination of the primary complaint.

**Treatment.**—This must be the same as in all severe cases of ophthalmitis. General bleeding may be required, or if not, it may be advisable to take blood locally. When the pustules form, they should be opened early, and be freely cauterized with the solid nitrate of silver. The same application is advisable when they burst.

The secondary form of variolous inflammation may require topical bleeding and purgatives, in the first instance; but, afterwards, an opposite plan is generally advisable, and the sulphate of quinia alone, or associated with other tonics, may be indicated. *Vinum opii* and a solution of nitrate of silver, or the solid nitrate of silver, are amongst the best topical applications.

#### b. INFLAMMATION OF THE SCLEROTICA.

SYNON. Inflammatio scleroticæ, Scleritis, S. atmospherica, Rheumatic ophthalmia, Rh. Scleritis; *Fr.* Sclérotite; *Ger.* Entzündung der weissen Augenhaut.

Inflammation of the sclerotic coat of the eye does not often exist

alone; being either accompanied, from the first, or speedily followed, by conjunctivitis. The iris and cornea suffer to a certain extent, although, unless from neglect or mismanagement, serious alteration of structure in either is not common.

**Diagnosis.**—There is a general bright redness of the globe of the eye, especially around the cornea, towards the margin of which the radiated vessels of the sclerotica are seen advancing, and along with those derived from the conjunctiva, passing over the cornea to the extent of about half a line, forming a fine vascular wreath, which encircles the cornea wholly or in part, and in which all the vessels are observed to terminate with sharp points, and at an equal height: none pass beyond it, the rest of the cornea remaining free. This arrangement and mode of termination of the vessels has been considered, by M. Jüngken, characteristic of *rheumatic scleratitis*.

In the progress of the inflammation, the iris becomes implicated, as indicated by contraction of the pupil, easily seen by comparing the sound with the affected eye: the iris also, is less active than usual. The capsule of the aqueous humour is affected, giving occasion to haziness of the cornea. The pain of the eyeball is severe, and of a stinging or darting character, extending to the orbit, forehead, cheek, and occasionally along the branches of the fifth pair of nerves to the face. The pain is usually increased by warmth, and is especially severe from sunset to sunrise. There is always, along with those symptoms, a considerable secretion from the eye; but, instead of its being mucous, as in inflammation of the conjunctiva, it consists of the secretion from the lachrymal gland. Photophobia or intolerance of light is always present, but it varies in degree in different cases. The same may be said of the constitutional irritation: fever almost always exists, but, at times, to a much greater degree than at others.

The inflammation is often restricted to one eye, and frequently alternates with rheumatic affections in other parts of the body. It also leaves a strong predisposition to recurrence on the application of slight causes.

The disease is not often seen in children and old persons.

**Treatment.**—The treatment of scleritis should be active, especially if the patient be plethoric, and there be much constitutional irritation. Blood may have to be taken from the general system, and the operation may be repeated again and again, unless the symptoms are relieved. Cupping and leeches and blisters may also be used, as in the forms of ophthalmia already considered. Cathartics may be prescribed as revellents, and calomel and opium be administered, so as to touch the mouth gently.

R.—Hydrarg. chlorid. mit.

Pulv. opii. aa gr. j.—f. pil.

To be taken morning and evening.

In regard to local applications, they should generally be used warm. They may consist simply of warm water, or warm milk and water; or warm decoction of poppy-heads. Warm opiate frictions have been advised to the temple and forehead, with the view of averting, or re-

lieving the nocturnal paroxysm of pain. Warm laudanum, or warm wine of opium, may be used for this purpose, or a liniment of soap with opium.

R.—Linim. sapon. comp. f ʒj.  
Tinct. opii. f ʒss.—M.

It has been advised, that these opiate frictions should be used especially about an hour previous to the expected attack.

Applications to the eye, in the form of collyria, have not been found of much service, and those that are excitant are injurious during the early stages. When, however, the acute symptoms have passed away, and *a fortiori* when they become chronic, *vinum opii*—pure, or diluted—dropped between the eyelids, is often beneficial. In such cases, too, especially when they are associated with evidences of a strumous diathesis, tonics, as sulphate of quinia, or arsenic, may be successfully administered.

Throughout the whole course of the disease, the iris should be kept under the influence of belladonna.

At times, the catarrhal and the rheumatic varieties of ophthalmia are combined, constituting *catarrho-rheumatic ophthalmia*, the presence of which may be diagnosticated, from a knowledge of the functional phenomena exhibited by the two varieties respectively. The cornea is very liable to suffer in this form of ophthalmia from ulceration, abscess, or interstitial deposition; or the inflammation may extend to the iris, so as to terminate in the effusion of lymph, and in obliteration of the pupil. More activity of treatment is required than in sclerotitis; and in addition to the remedies advised under the latter affection, the employment of the local agents recommended in the catarrhal variety is demanded.

#### C. INFLAMMATION OF THE CORNEA.

SYNON. *Inflammatio cornæ*, *Corneitis*, *Keratitis*, *Ceratitis*; *Fr.* *Kératite*, *Inflammation de la Cornée transparente*; *Ger.* *Entzündung der Hornhaut*.

Inflammation of the cornea—as has been already remarked—is apt to form a part, by extension, of the different forms of inflammation of the eye, that have already received attention. *Ceratitis* proper, however, commences in the cornea, whence it may spread so as to attain other tissues. In many cases, it is simple, as where it has been caused by any extraneous substance, as a particle of metal imbedded in the substance of the cornea; or, what is considered by some to be more common, it originates frequently in the scrophulous diathesis, and has been thought to merit the distinctive appellation of *strumous corneitis*.

**Diagnosis.**—The disease generally commences slowly, and insidiously, and the cornea loses its natural brilliancy, and becomes dull and hazy,—the surface appearing as if covered with fine dust, or resembling glass that has been breathed upon; and, at a later period of the disease, it seems studded with minute depressions. The fine vessels of the conjunctiva and sclerotica become injected;—those of the sclerotica, which is the principal seat of increased vascularity,

being arranged in radii around the cornea, and presenting a carmine hue: occasionally, too, the vessels are so numerous over the corneal epidermis, as to form a vascular network, which covers the entire surface, and has been termed *Pannus*. The pain, attending inflammation of the cornea, may be acute in the early stage, and be accompanied by photophobia and by lachrymation. As in other cases, too, it may come on in paroxysms. In the chronic stage, it is not violent; often, indeed, it is slight.

The terminations may be like those of other forms of ophthalmia, —for example, interstitial deposition; ulceration; protrusion of the iris; obliteration of the pupil; immobility of the iris; adhesion of the iris to the cornea, &c. &c. In all cases, the prognosis ought to be guarded; yet, division of the membrane by the knife generally heals without any inconvenience, as in the operation for cataract by extraction; and in cases of penetrating and other wounds of the cornea, we often see surprising recoveries.

**Treatment.**—In this there is nothing peculiar. The general management, advised under simple and strumous inflammation of the conjunctiva, is equally appropriate here. Full antiphlogistic measures may be required in the acute stage; but it must be borne in mind, that the inflammation is apt to pass into the chronic form; when revellents—as blisters behind the ears, occasional cupping on the nape of the neck, and mercury administered so as to produce a revellent impression on the mouth, with or without tonics, as the case may seem to require, will be most serviceable. The internal use of the oleum terebinthinæ, (gtt. xx.—xxx. ter die,) has been found serviceable in the strumous form.

Where the keratitis is of some standing, it is commonly accompanied by increased secretion of the aqueous humour, so that the cornea becomes more convex than natural. In such case, it has been proposed to evacuate the humour by puncturing the cornea, with the view of relieving the painful sense of distension; and it is said to have been practised with advantage by several practitioners.

Sulphate of quinia, in conjunction with collyria of nitrate of silver or sulphate of zinc, according to Dr. Littell, evinces frequently a remarkable control over vascular albugo, or that form of the disease, which is characterized by lymphatic deposition.

#### d. INFLAMMATION OF THE IRIS.

SYNON. Iritis, Inflammatio iridis; *Fr.* Irite, Irisite, Inflammation de l'Iris; *Ger.* Entzündung der Regenbogenhaut des Auges.

The iris may be inflamed, in consequence—as has been seen—of the extension of inflammation from other parts of the eye; but it may be inflamed also idiopathically; and again, the inflammation may be modified according to syphilitic, arthritic, or other complications. Hence, various divisions of iritis have been made; but these are scarcely necessary, inasmuch as they are indicated only by a knowledge of the history of the case, or a careful examination of the patient.

**Diagnosis.**—Inflammation of the iris, whatever may be its cause or

complication, presents certain phenomena, some of which belong to itself; others are common to it and to other forms of ophthalmia.

Those that belong to the iris are loss of its usual brilliancy, and change of colour. This change is the result of a combination of the natural colour of the iris with red blood, red blood and yellow lymph mixed, or yellow lymph alone. The following table of the more common changes in the colour of the iris observed during or after inflammation, has been given by Dr. James Hunter, surgeon to the Edinburgh Eye Dispensary.

MORBID COLOURS.			
Natural colour of the Iris, or of the inflamed portion of it.	First Stage of Inflammation, before lymph is effused.	Transition Stage—increased vascularity, and commencing effusion of lymph.	Third Stage, when lymph is effused, or in the Sequelæ of the Disease.
Blue.	Purple, of a campanula, imperial, or plum shade.	Black, hornblende black, or greenish black.	Dingy green, sap green, or grass green.
Bluish gray, with yellow markings.	Basalt black, or grayish black.	Applebark green.	Yellowish green.
Basalt black.	Brownish black.	Chestnut.	} Hazel wood brown, light olive, or wax yellow, according to the depth of the original colour.
Clove brown.	Reddish black.	Lighter chestnut or hazel.	
Hazel.	Brownish red, or tile red.	Wood brown, or very light hazel.	Tawny orange, or amber yellow.
Citron, or more or less of a yellow hue.	Deep orange.	Lighter orange.	Light yellow.
Transparent and nearly colourless—(the anterior serous layer.)	Arterial red.	Reddish orange.	Very light, or primrose yellow.

If the inflammation be seated in the serous covering of the iris—*iritis serosa*—the colour is not changed, but is modified by the appearance of a pale grayish coat, which gives a dull aspect to the membrane. In serous iritis, consequently, a blue iris may remain blue; but the colour is rendered dull. The structure of the iris also exhibits change; its fibrous texture is no longer observable, and tubercles or abscesses may form in its substance. It also loses its contractility, so that the pupil remains unchanged in size when exposed to different degrees of light, and is generally contracted.

Along with these pathognomonic symptoms are many which belong both to it and to other inflammations of the eye. Thus, there is zonular redness of the sclerotica, produced by numerous vessels surrounding the cornea, and running towards its edge: adhesions may also form between the iris at its pupillary margin, and the capsule of the crystalline; and, in rare cases, it adheres to the posterior surface of the cornea, and more or less plastic lymph is effused into the anterior or posterior chamber of the eye, or into both, giving rise to im-



perfection of vision, and, at times, to total blindness. Photophobia, lachrymation, and deep-seated circumorbital pain, generally aggravated at night, are present to a greater or less degree, according to the severity of the inflammation. The constitutional disturbance is often very considerable, and the symptoms proceed at times so rapidly, that vision is destroyed in a few days.

Such are the main phenomena of iritis, whatever may be the cause or complication.

**Causes.**—Along with mechanical injuries, and other agencies concerned in the production of ophthalmia in general, may be reckoned,—a constitutional predisposition given by syphilis and scrophula, and, perhaps also, by gout and rheumatism; hence we have, in many works,—*acute idiopathic iritis, syphilitic iritis, rheumatic iritis, arthritic iritis, and strumous iritis*, as so many subdivisions.

**Treatment.**—The first object in a case of iritis is to subdue the inflammatory action, and prevent the effusion of lymph. General blood-letting should be prescribed immediately, and be repeated according to circumstances; blood may, at the same time, be taken from the nape of the neck by cupping; and, along with this, cathartics, nauseating doses of tartrate of antimony and potassa, and the whole antiphlogistic treatment and regimen advised under the most acute forms of ophthalmia already considered, must be directed. Where the disease is less severe, and the constitution of the individual such as to render it advisable to be cautious in the abstraction of blood from the general system, cupping may be trusted to, along with the general management and regimen already inculcated.

The most approved method of treatment—after bloodletting has been practised—is to administer mercury so as to induce a revellent influence on the system, under which effusions of plastic lymph are prevented,—or removed, if they already exist.

R.—Hydrarg. chlorid. mit. gr. xij.  
 Opii pulv. gr. iij.  
 Glycyrrhiz. pulv. ℞ss.  
 Confect. rosæ. q. s. ut fiant pil. xij.  
 Dose, one, every four hours.

The effect upon the system is sufficiently evidenced by its *touching* the mouth. In some cases, in which full salivation supervened, it appears, according to Dr. Taylor, to have acted like a charm. Still, so many inconveniences are induced by ptyalism from mercury, that the remedy should not be pushed to this extent, if the disease will yield without it; and especial care should be taken on this head, if the iritis be accompanied by a strumous constitution. In such case, mercury may still be demanded, but it should be administered if possible so as only to affect the constitution gently, and its agency be kept up for a length of time. Should salivation supervene in any form of iritis, no farther good can, of course, result from mercury, until its effects have subsided.

To relieve the circumorbital pain, frictions with any of the liniments recommended in the other forms of ophthalmia may be had recourse to. The following ointment has been strongly recommended, combining, as it does, a mercurial with an opiate.

R.—Ung. hydrarg. ℥ss.  
Opil, pulv. ℥j.—M.

Eight or ten grains to the temple or forehead at night, previous to a paroxysm.

Collyria are of little or no benefit; and the various counterirritants, employed in ophthalmia, are of service only after bloodletting has been actively premised. Oil of turpentine has been extolled as an internal revellent, where mercury is inadmissible.

R.—Ol. tereb. rectific. f ℥j.  
Vitell. ovi.  
Tere simul et adde gradatim,  
Mist. amygd. f ℥iv.  
Syrup. aurant. f ℥ij.  
Tinet. lavand. comp. f ℥iv.  
Ol. cinnam. gutt. iij. vel iv.—M.

Dose, two tablespoonfuls, three times a day.

The above formula is Mr. Carmichael's, but it is unnecessarily complicated; and a much simpler, and one equally efficacious, might be substituted—

R.—Ol. tereb. rect. f ℥j.  
Vitell. ovi.  
Tere simul et adde,  
Aquæ menthæ piper. f ℥viss.

To prevent contraction of the pupil, extract of belladonna may be smeared over the eyebrow once in twenty-four hours, or a filtered aqueous solution may be dropped on the conjunctiva. When cautiously employed, it gradually elongates the filaments of lymph that have formed between the iris and the capsule of the lens; and, with this view, its use may have to be continued for months.

In the iritis, which occurs in a constitution contaminated by the syphilitic poison, as well as in the other forms referred to,—the same general principles of treatment apply, and but slight modification is necessary. In the rheumatic, arthritic, strumous, and more chronic forms of idiopathic iritis, sulphate of quinia is often beneficial, but it should not interfere with the other appropriate remedies, and especially with calomel and opium.

#### C. INFLAMMATION OF THE CHOROID.

SYNON. Inflammatio chorioideæ, Chorioideitis, Choroiditis; *Fr.* Choroidite, Inflammation de la Choroïde; *Ger.* Entzündung der Gefäßhaut des Auges.

As an accompaniment of inflammation of other parts of the eye, choroiditis has been admitted by all writers on the subject; but it has not been described by all as an independent disease.

**Diagnosis.**—The following have been depicted as the functional phenomena of inflammation of the choroid. One of the earliest symptoms is the formation of a blue zone around the cornea: this is produced by thinning of the sclerotica, which is succeeded by the protrusion of small tumours of a dark bluish colour, varying in size, number and position; a watery effusion forms gradually between the choroid and the retina, which produces absorption of the vitreous humour, and compresses the retina into a cord-like substance, simulating the appearance of deep-seated cataract or malignant tumour of the optic nerve. The pupil is often altered in shape, the iris immovable, and the cornea

opaque; these symptoms arising from simultaneous inflammation of those various parts. Enlargement of the globe of the eye likewise results at times, and morbid changes, which may render the extirpation of the organ necessary. There is always more or less pain and intolerance of light; but the constitutional symptoms are generally inconsiderable.

**Causes.**—Of these we know little. It is a disease of the adult age, and is said to be more frequent in females than in males, and especially in those of a strumous habit.

**Treatment.**—This does not vary from that recommended in iritis. Mercury does not, however, seem to be decidedly beneficial. After active depletion, tonics, as sulphate of quinia, have been found of great benefit, and as the disease frequently occurs in strumous habits, their use is generally indicated. The arsenite of potassa (*Liq. potass. arsenit. gtt. v.—viij. ter die*) has been advised by Mr. Mackenzie: the morbid appearances, in the advanced stage—it is affirmed—have disappeared under its use, and health and vision have been restored simultaneously.

When the eyeball is tense and painful, and there is a tendency to choroid staphyloma, puncturing the sclerotica and choroid, so as to evacuate the contained fluid, has afforded relief.

#### F. INFLAMMATION OF THE RETINA.

SYNON. Retinitis, Inflammatio Retinæ, Amphiblestroditis, Dietyitis; *Fr.* Rétinite, Inflammation de la Rétine; *Ger.* Entzündung der Netzhaut des Auges.

This is an uncommon affection, except as an accompaniment of other forms of ophthalmia.

**Diagnosis.**—As the retina cannot be seen, the existence of retinitis has to be inferred from disturbance of function. The intolerance of light is great; shining spectra of various kinds are seen, and there is a gradual impairment of vision; the iris is motionless, and the pupil greatly contracted, whilst the whole globe is highly sensible to the slightest touch or movement. These symptoms are usually accompanied by deep-seated pain in the globe of the eye, which extends to the eyebrow, and is often very severe, and accompanied by symptoms of cephalitis. When the disease is acute, the febrile excitement is often very great. Extensive disorganization of the internal structures of the eyeball is a common result; and purulent effusion sometimes takes place, which may augment to such a degree that the cornea gives way, the pus is discharged, and the eyeball collapses.

Acute inflammation of the retina is less seen than the chronic form, which is characterized by intolerance of light of different degrees, impaired vision, with ocular spectra, and, ultimately, by immobility of the iris. It has been considered one of the most common causes of amaurosis, and requires the revellent treatment recommended under that disease.

## II. AMAUROSIS.

SYNON. Paropsis amaurosis, Immobilitas Pupillæ, Gutta serena, Cataracta nigra, Drop serena; *Fr.* Amaurose, Goutte sercine, Cataracte noire, Anoptico-nervie (*Piorry*); *Ger.* Schwarze Staar.

In the language of the pathologists of the day, amaurosis means

partial or complete loss of vision from impaired sensibility of the retina. This may arise in two ways,—*first*, owing to disease primarily seated in some part of the nervous apparatus of vision, as the retina, optic nerve, and encephalon: and *secondly*, sympathetically, owing to disease in other, and, perhaps, distant parts of the system.

**Diagnosis.**—Where amaurosis occurs as a consequence of chronic retinitis,—and this has been considered the most common cause of the disease—there is generally some degree of vascular excitement present; the patient complains of pain or uneasiness in the eye, with a sense of heat, dryness, and morbid sensibility to light; he is disinclined to use the eyes, and is frequently annoyed by ocular spectra—as *muscæ volitantes*, and the appearance of bright spots in front of the eyes. Interstitial deposition takes place into the membrane, and its sensibility becomes less and less, and ultimately vision is wholly lost. Frequently, along with impairment, there is great deprivation of vision,—*hemiopia* being at times present, at others *diplopia*, and at others, again, the singular phenomenon of double vision with one eye. Strabismus, too, is not uncommon; and, occasionally, when the central portion of the retina is wholly insensible, the patient is still capable of seeing objects that are situate laterally, with tolerable distinctness.

The ocular spectra that exist in amaurosis may likewise be present when there is no serious affection of the eye: thus, many healthy persons observe appearances of cobwebs, and of serpentine tubes, open, at times, at both extremities, which are dependent upon some modification in the blood-vessels of the retina, but which may never interfere farther with vision. In all cases of *muscæ volitantes*—when they are unattended by pain and the other phenomena that characterize amaurosis—the pupil preserving its clear black colour, the iris its mobility, and the power of distinguishing minute objects is unimpaired, the patient need be under no apprehension of amaurosis. (See the author's *Human Physiology*, 6th edit. i. 226, Philad. 1846.)

In the majority of cases of amaurosis, there is pain, which may be confined to the eyes, or may extend to the head and face; frequently, however, it is rather an uneasy sensation of fulness and distension than of positive pain. It may be constant, too, or fugitive; and, in its recurrence, may observe regular periods.

When the eye is examined, the appearances may be distinct or equivocal. Usually, the pupil is dilated and immovable; or the movements of the iris are sluggish and limited; but instances occur in which there is regular contraction and dilatation of the pupil; and if one eye only be amaurotic, the pupil often dilates when the other is closed, and conversely; hence the propriety of the precaution, recommended in such cases, of closing the sound eye, whilst we examine into the condition of the other. The humours may exhibit changes in their transparency; a greenish-yellow opacity may be seen behind the pupil—*glaucoma*; or they may be altered in their consistence, so that the eyeball may feel softer than natural, which has been ascribed either to the partial absorption of its fluid contents, or to the breaking down of the membranous septa, by which the figure and position of the vitreous humour is maintained.

When amaurosis is combined with glaucoma, there may be some difficulty in distinguishing it from incipient cataract, but the opacity, in the latter disease, is of a milk-and-water hue, and appears immediately behind the pupil, by the margin of which it is bounded. In posterior capsular cataract, the opacity is deep-seated like that of glaucoma, but it differs from it in exhibiting striæ radiating from a central point, whereas the opacity in glaucoma is always uniform. In doubtful cases, too, it may be well to examine the eye by means of artificial light. If a lighted candle be held before an eye, the pupil of which has been dilated by belladonna, and on which there is no obscurity in the humours or their capsules, three images of the flame are perceptible,—two upright and one inverted—one of the former reflected from the cornea, and the other from the anterior part of the crystalline: the third inverted image being caused by the reflection from the posterior concave surface of the crystalline. It is obvious, that if the inverted image be observed, there can be no opacity on the posterior capsule of the lens or in the lens itself.

Where amaurosis is complete the countenance loses its expression, and there is a characteristic vacancy; the eyeball frequently has a tremulous, vacillating or rolling motion, and the air and gait of the patient is often peculiar.

The progress of the disease varies materially; and it may not be fully developed for months, or even years.

**Causes.**—These are very numerous. It would seem, that a predisposition to it is laid, at times, in organization; sometimes, also, it is congenital. Whatever depresses the nervous system generally, may act as a predisposing cause; thus, it is ascribed to excessive venery; copious hemorrhage; undue lactation, and the long continuance of depressing passions. It has been observed, too, that frequent attacks of strumous ophthalmia in childhood have appeared to render the individual liable to amaurosis in after years, on the application of slight exciting causes. Period of life, also, seems to afford a predisposition; for although the disease may occur at all ages, it would seem to be more frequent in the age of virility.

As exciting causes, may be reckoned over-exertion of the eyes, particularly in the examination of minute objects, or exposure of the eyes to bright light; hence the disease is more frequent in certain occupations than in others. It may arise also from mechanical injury; or from morbid conditions of the optic nerves, and the nerves of the fifth pair; or even from irritation of those nerves by a carious tooth. The nerve of sight is the optic; but it is incapable of executing its function, unless the branch of the fifth nerve—the nerve of general sensibility—is in a state of integrity: hence, amaurosis may result from injury or disease of either.

Amaurosis has likewise been ascribed to violent mental emotion, and to the effects of lightning, the rays of a tropical sun, &c.; but it is unnecessary to attempt the enumeration of all the circumstances that may directly or indirectly occasion it.

**Treatment.**—It is important, in all cases, to inquire into the causes that have given rise to the amaurosis, and the precise character of the

pathological condition. Should it appear to be a chronic retinitis, it must be treated by cupping, and other revellents, and by the various agents recommended under RETINITIS. Mercury has been especially advised, and it may be necessary that the system should be kept under its influence for weeks. Should the affection seem to be connected with any morbid condition elsewhere, this must be combated by appropriate remedies; at times, especially in the temporary amaurotic affections of children, an emetic followed by a brisk cathartic will remove it. In the debility succeeding profuse evacuations of any kind, or no matter how induced, the proper treatment will be obvious.

The main attention has been directed to the impaired condition or the local paralysis of the optic nerve itself: the general treatment rests upon the principles laid down under PARTIAL PARALYSIS. Too often, however, all these are inefficacious. The article most employed has been strychnia. It may be given either internally or be administered endermically—the latter being preferable. A blister may be applied to the eyebrow or the temple, and from one-sixth to one-fourth of a grain of strychnia may be sprinkled on the blistered surface once a day, until headache, pricking pains over the body, tremors; or tetanic twitchings are induced. Some writers have deposed to its greater or less success; but others, although they have used it in cases apparently the most favourable, have not seen a single instance of benefit from its employment. Errhines have been advised, under the notion, that by irritating the branches of the fifth pair, an excitant influence maybe exerted on the retina; and if the disease be connected with the fifth pair, still more good, may, perhaps, follow their employment; but no great reliance can be placed on them. In such cases, benefit has resulted from extracting one of the teeth of the upper jaw of the same side as the affected eye.

Acupuncture, ammoniated lotions, moxas, blisters, and every form of counterirritant have been used to the temples, behind the ears, or to the back of the neck. M. Magendie affirms, that he has treated many cases of incomplete amaurosis with success by galvano-puncturation. He fixed one needle in the frontal nerve, and another in the superior maxillary, making them communicate respectively with the poles of a galvanic pile of twelve pairs of plates, each six inches square. Whenever the contact was made, the patient experienced a painful commotion in the course of the nerves, and at the bottom of the orbit; the light became better appreciated; and the pupil contracted. Similar results were obtained from the use of galvanism, by Dr. Hays, of Philadelphia, who considers it, when properly applied, to be a valuable and effective remedy in certain forms of the disease: this was evinced not only in the improvement that followed its application, but in the fact, that the patient saw better whilst subjected to the galvanic action. He found a Cruikshank's battery of fifty pairs of plates, three inches square—when in full activity—too powerful for the purpose, so that only one-half or two-thirds of the plates were usually employed. The connexion was made by means of leaden wire conductors, to one end of which was soldered a slip of copper, and to the other a hemisphere of brass, the flat surface of which was filed into grooves crossing at

right angles, so as to form a number of sharp points. Over these were tied thin disks of sponge, which were kept moist with a solution of common salt, and when it was desired to introduce strychnia into the system, the sponge, attached to the negative pole—and sometimes that attached to the positive pole also—was moistened with a solution of it. When the whole force of the battery was not wanted, instead of putting the slips in the extreme cells, they were placed in cells more or less remote, according to the power required, and the force was readily regulated.

The galvanic current may be made to pass from the mastoid process to the superciliary ridge. Electro-magnetism has been found equally serviceable.

Strychnia has recently been introduced by inoculation in the neighbourhood of the eye, in amaurosis. A grain of the sulphate was in one case dissolved in two drops of water. The first day, twelve inoculations were practised,—six above the eye, in the course of the supra-orbital nerve, and six under and on the side of the nose. On that day, there was no effect; but the next day slight tremors occurred in the neighbourhood of the inoculated spots. After two days, the inoculations were repeated, and the number of punctures was increased to eighteen. The patient now became sensible of a slight haziness. After five successive inoculations, carried to the length of thirty punctures, the patient began to distinguish objects: after the eighth, vision was completely restored; the contraction of the pupil gradually increased, and the other symptoms diminished after five grains of the sulphate had been used. After the lapse of two months, the patient was perfectly restored.

The two following affections may perhaps be classed as examples of temporary amaurosis.

#### a. HEMERALOPIA.

SYNON. *Paropsis noctifuga*, *Visus diurnus*, *Nyctalopia* (of some); *Amblyopia crepuscularis*, *Dysopia tenebrarum*, *Caligo tenebrarum*, *Cæcitas crepuscularis*, *Acies diurna*, *Amaurosis nocturna*, *Night-blindness*, *Day-vision*, *Day-sight*, *Hen-blindness*; *Fr.* *Vue diurne*, *Aveuglement de nuit*; *Ger.* *Nachtblindheit*, *Blindheit bei Nacht*, *Tagsehen*, *Taggesichte*, *Nachtnebel*.

Great confusion has existed amongst writers in regard to the use of the terms *Hemeralopia* and *Nyctalopia*. Whilst some have employed the former for night-blindness,—in the sense in which it is used here,—others have assigned it to that morbid condition of the organ of vision in which the individual is incapable of seeing except at night. Hippocrates employed it in the former sense; Galen in the latter.

**Diagnosis.**—Vision, in this singular affection, may be perfect during the day; but as the light of the sun fades away, it becomes more and more imperfect; and in cases in which the disease is completely established, the individual is unable, it is affirmed, to see a lighted candle even when held close to the eye. The organ, on examination, exhibits no change; nor ought any to be expected, inasmuch as vision is perfect in the day. In some cases, it would seem, the retina ultimately becomes completely insensible. The duration of the disease varies. When left to itself, it is said to last from two weeks to from three to

six months ; and it is very apt to recur, provided the patient be exposed to the same causes that first induced it.

**Causes.**—Hemeralopia is endemic in many countries ; and is observed more especially where the heat is intense, or the ground such as to reflect the rays of light powerfully to the eye. Hence it prevails in tropical regions, and, likewise, in hyperborean countries, where the eye is exposed to the prolonged action of light, especially if reflected from a white surface. Europeans often suffer from it in the West Indies ; and perhaps nowhere is it found more commonly or more markedly than in Russia. According to the *Mémoires de la Société Royale de Médecine* for 1786, it would appear to have been endemic in some parts of France, and especially in the neighbourhood of Roche Guyon, on the banks of the Seine, the soil of which is a dazzling chalk ; and the Statistical Report of Surgeon-General Lawson exhibits, that the affection is seen amongst the troops both of the northern and southern posts, but much more frequently in those of the latter. In Florida, it is by no means uncommon. It apparently consists in the impairment or exhaustion of the retina by intense light, so that twilight, or the feeble light of night, is incapable of adequately impressing it ; and the affection may therefore be regarded as essentially amaurotic in its character.

It would appear that the retina, if left to itself, will generally resume its functions. Mr. Bampffield, who observed about 300 cases within a short space of time, found that every one was restored without any resulting imperfection of vision.

**Treatment.**—From what has been just observed, neither much nor active treatment can be needed. Mr. Bampffield thought, that the use of cathartics and blisters to the temples abridged its duration, and Mr. Charles Kidd found great benefit from the use of turpentine, given according to the following formula :

R.—Ol. terebinth.  
 Ol. ricini aa fʒj.  
 Mist. camphor. fʒiv.  
 Liquor. potassæ fʒj.  
 Tinct. opii gt. x.—M.

Half an ounce to be taken every night and morning.

The patients were cured in a few days.

Cupping has also been used with advantage. It must be obviously proper to regulate the quantity of light admitted into the chamber, so that the eyes may gradually recover their wonted impressibility. With this view, the light at first may be excluded ; and subsequently be cautiously admitted. Dr. Wharton, of the United States army, cured several cases simply by exclusion of light ; or, in other words, by trusting wholly to the recuperative powers. The cure was effected in from 24 to 60 hours.

In very rare cases, it would seem that hemeralopia is a congenital affection, and capable of being transmitted from father to child. In such cases, there must of necessity be a peculiarity of organization. M. Cunier has published the history of a family, in which it has been transmitted by hereditary descent through six generations.



## b. NYCTALOPIA.

SYNON. Nyctalopiasis, Paropsis lucifuga, Visus nocturnus, Oxyopia, Cæcitas diurna, Hemeralopia (of some), Amblyopia meridiana, Photophobophtalmia, Photophobia, Dysopia luminis, Visus acrior, Vespertina acies, Night-sight, Day-blindness; *Fr.* Vue nocturne, Aveuglement de jour; *Ger.* Tagblindheit, Blindheit bei Tage, Nachtsehen.

Dr. Mackenzie has referred to cases, reported by Ramazzini, Mr. Guthrie, Baron Larrey, and Mr. Isbell, in which there was some reason to believe in a condition of day-blindness as marked as that of night-blindness, being endemic in certain places; but he considers them too vague to furnish grounds for any general conclusion. Mr. Lawrence, too, remarks, that he never saw a case, in which it existed as an amaurotic symptom, to the degree of vision being perfect in the night, or even in twilight, and lost during the day, as we see the converse in hemeralopia.

When the eye has been accustomed to but little light, as in the case of the miner, and then is exposed to the full glare of day, it is some time before it becomes accommodated to the new circumstances in which it is placed; and a temporary degree of nyctalopia exists. A more permanent form is seen in the albino, which is dependent upon organization, or upon deficiency of the pigmentum nigrum: this gives occasion to reflection of the luminous rays within the eyeball, and to consequent impairment of vision in the light of day, which is not experienced in twilight, the patient being then able to see distinctly.

Intolerance of light is a common symptom of many different affections of the eye and the encephalon; but as an original disease, like hemeralopia, it is never perhaps met with. Should such a case occur, the management must rest upon the principles mentioned under Hemeralopia. The eye must be gradually educated to bear a larger and larger amount of light, until the defect is obviated.

Albinoism, being organic, is of course irremediable. All that can be done, in such case, is to regulate duly the quantity of light that impinges upon the eye.

## CHAPTER II.

### DISEASES OF THE EAR.

SYNON. *Fr.* Maladies des Oreilles; *Ger.* Ohrenkrankheiten.

UNTIL of late years, diseases of the ear were but little attended to by the profession. By almost common consent, they were allowed to pass into the hands of individuals calling themselves *Aurists*, many of whom were imperfectly educated, whilst the calling itself was regarded, by the profession, as little better than that of the *bonesetter*. Of late years, however, the subject has been investigated by competent individuals, and the treatment of these interesting affections has passed into the hands of regular physicians and surgeons, from which it ought never to have wandered. As, in the investigation and management of most aural diseases, various manipulations are demanded, they have been esteemed to belong rather to the domain of surgery; and their consideration, consequently, has been generally transferred to works on external pathology. There are, however, some pathological conditions of the organ, that cannot be passed over in this work; but, before proceeding to them, it may be well to refer briefly to the anatomical arrangement of the parts that are implicated.

The organ of hearing may be divided into three portions: 1, the *external ear*, or that exterior to the *membrana tympani*; 2, the *middle ear*, the space contained between the *membrana tympani* and the internal ear; and 3, the *internal ear*, in which the auditory nerve is distributed. The two first of these may consequently be regarded as the physical portion of the organ of hearing:—the last as the nervous portion. The *external ear*, it must be borne in mind, is lined by a prolongation of the skin, which passes into the *meatus auditorius externus*, and, becoming gradually thinner as it proceeds, is ultimately reflected over the outer surface of the *membrana tympani*. It is in this tegument, that the sebaceous follicles or crypts are placed, which secrete the *cerumen*. This humour sometimes accumulates in the *meatus*, and may be the source of deafness, as well as of irritation and inflammation of the membrane. The distance between the external aperture of the *meatus* and the *membrana tympani* is about an inch in the adult; and by raising the *pavilion*, so as to straighten the passage, and permit the rays of the sun to fall into the *meatus*, the membrane may be readily seen. This can be much better accomplished, however, by means of an appropriate *speculum*, by which, with the aid of the light of the sun, or that reflected from a mirror, the *membrana tympani* and *meatus auditorius* may be minutely examined, with the view of detecting any existing morbid condition. The external ear is, consequently, a *cul-de-sac*, formed by a prolongation of the common integument. It has no aperture of communication with the middle ear. The *middle ear* or *cavity of the tympanum* is bounded externally by the *membrana tympani*, and internally by the internal

ear. It communicates with the cells in the mastoid process of the temporal bone; and with the throat by means of the Eustachian tube. In the bony paries, forming the boundary between it and the inner ear, there are two foramina,—the *foramen rotundum*, and the *foramen ovale*; both of which are closed by membranes; and to the latter is attached one extremity of a chain of bones or *ossicles*, which passes from the posterior surface of the membrana tympani to the foramen ovale. In health, the Eustachian tube is pervious, and readily permits the passage of air to, and from, the middle ear. The whole of this cavity is lined by a mucous membrane, which is reflected over the membrana tympani proper, passes down the Eustachian tube, and commingles with that of the pharynx. This lining of the middle ear is, in reality, fibro-mucous in its character, having the functions, both of a mucous membrane and a periosteum. The *internal ear* is the most important part of the auditory apparatus; but it is of the least consequence to the therapist, as it is beyond the reach of his agencies. In it is distributed the auditory nerve, which enters the meatus auditorius internus in the petrous portion of the temporal bone, passes into the cavities of the internal ear, and terminates in the different parts of the membranous labyrinth. With the portio mollis or the auditory nerve proper, the portio dura or facial nerve proceeds along the meatus auditorius internus, and passes through a foramen near the base, to gain the aqueduct of Fallopius, along which it proceeds, receiving the Vidian twig of the fifth pair, and giving twigs, containing motor and sensitive filaments, to different parts of the middle ear. It is the portio dura, which—as already seen—is concerned in one form of facial paralysis.

#### J. INFLAMMATION OF THE EAR.

SYNON. Otitis, Inflammatio auris; *Fr.* Otite, Inflammation de l'Oreille;  
*Ger.* Entzündung des Ohres.

Inflammation of the ear may affect either the *external*, the *middle*, or the *internal* ear, each of which cases it may be well to investigate separately. It may be convenient, also, to consider chronic otitis under a distinct head.

##### a. *Acute Inflammation of the External Ear.*

SYNON. Otitis externa, External otitis.

**Diagnosis.**—*Earache*—*Otalgia*, *Otodyne*, *Dolor aurium*, *Spasmus aurium*; *Fr.* *Otalgie*; *Ger.* *Ohrenschmerz*, *Ohrenzwang*—is an affection often met with in childhood; but adults are not exempt from it. It is extremely painful, but is rarely of any consequence. At times, it appears to be wholly neuralgic; but, at others, is connected with more or less otitis, and is occasionally followed by a purulent discharge.

Inflammation of the external ear is indicated by redness, tumefaction, pain and heat in some part of the external ear, accompanied by a mucous or purulent discharge from the meatus auditorius externus or from the surface of the pavilion. The inflammation may be confined to the lining of the meatus, whence it has received, from some, the name

*Otitis catarrhalis*, or it may affect the integuments of the pavilion, as in cases of frostbites, or where inflammation of the skin has extended from other parts to it, as in erysipelas faciei. The inflammation may, however, extend to the cellular membrane beneath the tegument and to the fibro-cartilage of the ear, giving occasion to abscess, sloughing of the fibro-cartilage, &c. Occasionally, too, as the result of external otitis, an abscess forms before the meatus auditorius externus, which breaks into it, and requires attention, inasmuch as the pus that accumulates may exert a sinister influence on the neighbouring parts, and denude the bones and fibro-cartilages of the external ear. At times, in this form of otitis, the tumefaction of the ear is so great as scarcely to admit the entrance of a knitting-needle into the meatus.

**Causes.**—External otitis is often connected with a strumous habit; and a predisposition is afforded by dentition and by previous attacks. It is often caused by the introduction of extraneous bodies, and by picking the ear. Not unfrequently, too, it is induced by the extension of inflammatory and cutaneous affections of the neighbouring parts. It is not always, however, easy to appreciate the cause.

**Treatment.**—In regard to simple otalgia or earache, the physician is rarely consulted. Should the severity of the pain, however, be such as to require him to prescribe, and the signs of inflammation be slight; fomentations may be applied to the affected ear, and a little warm oil and laudanum be dropped into it. During the night, a soft poultice may be substituted for the fomentations. Commonly, in cases of otitis of the external ear, it is not necessary to have recourse to any very active treatment. General bloodletting is certainly rarely required; but if there be great swelling and pain, it may be necessary; and also to take blood from the neighbouring parts by means of leeches. Cathartics may be administered, and a rigorous diet be enjoined. Warm fluids—as milk and water—may be thrown into the meatus by means of a syringe; but the introduction of any substances that may irritate is objectionable. Where there is much burning pain in the meatus, warm fomentations may be applied constantly to the ear and to the side of the head, and leeches behind the ear may be advisable. Revellents may likewise be applied to the nape of the neck or behind the ear. By a modern writer on diseases of the ear, M. Kramer, tartar emetic ointment, rubbed on the mastoid process, is preferred. Should the inflammation be slighter, and seated deeply, gently astringent injections may be thrown in. An injection of the acetate of lead or of the sulphate of zinc may be used for this purpose.

R.—Plumb. acet. gr. j.—viij.  
Aquæ f ʒij.—M.

Or,

Zinci sulphat. gr. x.  
Aquæ f ʒij.—iv.—M.

If the inflammation, in spite of every care, proceeds to suppuration, this ought to be forwarded, as far as practicable, by warm emollient poultices, kept constantly applied, until the abscess breaks; and, should the discharge become very fetid, the fætor may be corrected by injections of the chloride of lime, &c., recommended under otorrhœa.

It need scarcely be said, that attention must in all cases be directed to the cause, and that this must be removed where practicable.

When the disease becomes chronic, the treatment advised under otorrhœa must be enjoined.

b. *Acute Inflammation of the Middle Ear.*

SYNON. Otitis interna, Internal otitis; Fr. Otite interne, O. tympanique.

**Diagnosis.**—Prior to an attack of inflammation of the middle ear, inflammation of the pharynx, tonsils, or Schneiderian membrane often exists. Its invasion is, however, at times, spontaneous: there is acute pain in the cavity of the tympanum, which is augmented by noise, or by the movement of the lower jaw in mastication, with sensations of beating and almost insupportable dartings. The pain is often referred by the patient to the interior of the cranium, and is compared by him to blows of a hammer; a disagreeable feeling of itching may exist, also, in the throat, where the Eustachian tube terminates; but this symptom is by no means constant. When expiration is made forcibly, with the nose and mouth closed, and the Eustachian tube is pervious, a great increase in the pain is experienced. Frequently, however, the pharyngeal orifice of the tube is not free, when, of course, this test is unavailable. At a later period, in very severe cases, an abscess may form in the cavity of the tympanum, followed by perforation of the membrana tympani, and a copious discharge of purulent, offensive fluid, by the meatus auditorius externus. If the Eustachian tube be pervious, and a forcible expiration be now made, with the nose and mouth closed, the air will be heard to issue through the perforation in the membrane, and there will be an increase in the discharge of matter. Occasionally, there is found, mixed with the pus, one of the ossicles of the ear, or carious portions of the mastoid process; but this is more apt to occur in the chronic form of the disease. It may happen, likewise, that the abscess breaks into the middle ear, and is discharged through the Eustachian tube into the throat. According to one observer, M. Itard, this occurs in about one case in ten. The patient feels the pus passing down the tube, and ejects it, at times, in considerable quantity.

In very acute cases of otitis of the tympanum, the deafness on the affected side is almost complete, especially when an abscess has formed.

It has been already remarked, that the lining membrane of the cavity of the tympanum is fibro-mucous—or at once a mucous membrane and a periosteum; and it has been shown, that the membrane may be the seat of a blennorrhœal inflammation in its outer layer, and of a more violent inflammation in the inner layer,—the *otitis interna* of many. In the former case, the mucus may be secreted in such quantity as to impede the entrance of air through the Eustachian tube into the middle ear, and thus cause deafness. In the latter case, the bony parietes of the tympanum sooner or later participate in the inflammation. Inflammation, too, originally seated in one layer, may spread so as to involve the other.

Where mucus exists in any quantity in the middle ear, it may be

detected by catheterism of the Eustachian tube, which has accordingly been employed, not only in the way of diagnosis, but with a therapeutical object. Air *douches* are used for this purpose by means of an apparatus, which has been described by the author elsewhere. (*New Remedies*, 5th edit. p. 374: Philada. 1846.) Different sounds are rendered, according to the precise condition of the cavity.

**Causes.**—The condition of the organism that predisposes to external otitis is equally favourable to otitis of the middle ear. Like it, the affection occurs more frequently before than after puberty. It is often a result of affections of the throat, and is occasioned by the inflammation extending along the Eustachian tube by continuity of membrane;—*Syngitis Eustachii*—but, like other inflammations, it may supervene without any obvious cause.

**Treatment.**—This ought to be more active than in external otitis. Bleeding may be necessary from the general system; and cupping or leeches will always be needed. At the same time, cathartics and nauseant doses of antimonials should be prescribed. After the active symptoms have been somewhat subdued by this course, revellents—as blisters—should be applied behind the ear, or to the nape of the neck. Should the continuance of the pain, headache, and, perhaps, delirium, indicate that suppuration has taken place, or is about to occur, there is no agency which can expedite it. Generally, the collection will burst through the *membrana tympani*, but should this not occur before the sixth or seventh day, it has been thought desirable by Dr. J. H. Bennett, that the *membrana tympani* should be punctured, as the long confinement of matter in the cavity, mixed more or less with air, might from its being insinuated into the mastoid cells, give rise to caries, or at all events induce a spontaneous laceration of the *membrana tympani*, that might be highly injurious. The author has never met with such a case; and he apprehends that the necessity for the measure advised cannot often arise.

After the abscess has made its way through the *membrana tympani*, warm milk and water, or warm mucilage of sassafras may be injected into the ear, three or four times in the day, and the patient may lie on the affected ear. Should obstruction exist in the Eustachian tube, it may, if at the pharyngeal opening, be removed, at times, by gargles of muriatic acid or of nitrate of potassa; but these will generally be insufficient, and, accordingly, it has been advised to throw into the tube injections of warm water, or of air.

In cases of blennorrhœal otitis of the middle ear, it has been recommended, that the air *douche* should be employed; and if a slight mucous *râle* be heard, on applying the ear to that of the patient, whilst the air is streaming in, followed by a material improvement in the hearing, which may be ascertained by the distance at which he hears the ticking of a watch, it has been advised that it should be employed daily. Should no improvement, however, in the sense of hearing take place after the fourth sitting, it has been considered that the attempt should not be persisted in. M. Kramer perfectly cured all his cases of inflammation of the mucous membrane of the middle ear, with muculent obstruction, by dispersion of the mucus, and bringing the secretion of it back to the natural standard. To this end the local treatment by cathe-

terism and the air *douche*, he says, contributed most. In recent cases, merely blowing through the catheter was sufficient, without using the air-press.

The careful introduction of the catheter may be necessary in this variety also.

c. *Acute Inflammation of the Internal Ear.*

SYNON. Otitis interna; Fr. Otite labyrinthique.

Inflammation of the internal ear is but little known, and is probably of rare occurrence. When, indeed, it is met with, it would seem to be almost always owing to an extension of inflammatory action from the middle ear or the neighbouring parts. The intensity of the pain, the great depth of the affected parts, the deafness, and the neuralgic character of the disease of the ear, with the sudden supervention of cerebral symptoms, and the absence of the signs of otitis of the external and middle ear, may lead us to suspect its existence.

**Treatment.**—The general management must be that adapted for inflammation of the ear in general. Little or no good can be expected from agents thrown into the middle ear.

d. *Chronic Inflammation of the Ear.*

SYNON. Otitis chronica, Otorrhœa; Fr. Otorrhée, Pyo-otorrhée (*Piorry*); Ger. Ohrenfluss.

This form of otitis is much more frequently met with than the acute. It is, indeed, a common occurrence for persons to be affected through life with it, without suffering any marked inconvenience, except that which is produced by an intermittent or continued discharge from the meatus auditorius externus. Although, however, this may generally be regarded as *chronic otitis*, it may be kept up like other discharges by a condition of vessels more like that of gleet, in which there is secretory irritation rather than inflammation. In such cases, the chronic inflammation may be limited to the lining membrane of the middle ear, or it may be complicated with periostitis and caries of the bone. The discharge is extremely fetid; and, at times, fragments of bone are mixed with it. Fœtor of the discharge does not of itself indicate that the bones are affected; for, as in similar conditions of the lining membrane of the nose, the secretion may be peculiarly and disagreeably fetid. At times, the mastoid region becomes implicated owing to the extension of the disease to the mastoid cells, so that ulceration of the bone and soft parts may take place, and a fistulous opening be formed communicating externally. When pain is referred to the mastoid region, along with chronic otitis, the affected mastoid process is sometimes observed to be smaller than the other, owing to its cellular structure becoming broken down, and escaping along with the discharge by the meatus auditorius externus.

The recent researches of Mr. Toynbee have led him to infer, that the most common cause of deafness is chronic inflammation of the lining membrane of the middle ear, and that by far the greater majority of cases commonly called 'nervous deafness,' ought, more properly, to be attributed to this cause; and such has been the result of the observations of the author.

In other cases, the otorrhœa is complicated with encephalic disease, giving rise to the *cerebral otorrhœa* of writers. This complication is one of the dangers to be apprehended from otorrhœa accompanied by caries of the bones: the morbid process is apt to extend to the petrous portion of the temporal bone, whence it readily spreads to the meninges of the brain. By some, it has been supposed, that the encephalic mischief, in such cases, may be primary, and unconnected with the condition of the ear; but it is probable, that in most cases it is secondary, although the encephalic mischief may be the first circumstance that attracts the attention of the patient. When the encephalon becomes diseased under these circumstances, the character of the affection will be indicated by the functional phenomena pointed out elsewhere, which need not be repeated here. It is well, however, to bear in mind the fact above mentioned,—that these phenomena may present themselves without any discharge having taken place from the ear; and, consequently, that attention should be paid, in all cases, to discover, whether a complication with otitis may not exist.

**Pathological Characters.**—The pathological conditions, to which inflammation of the mucous membrane of the middle ear gives rise, are divided by Mr. Toynbee into three stages; based on one hundred and twenty dissections of the human ear.

In the *first stage*, the membrane retains its natural delicacy of structure, although its blood-vessels are considerably enlarged and contorted; blood is effused into its substance, or more frequently at its attached surface; blood has also been found between the membrane and the membrane of the fenestra rotunda, and in very acute cases, plastic lymph is effused over its free surface.

The *second stage* is characterized by the following pathological conditions: *First.* The membrane is very thick, and often flocculent. In this state, the tympanic plexus of nerves becomes concealed; the base and crura of the stapes are frequently entirely imbedded in it; whilst the fenestra rotunda appears only like a superficial depression in the swollen membrane. *Secondly.* Concretions of various kinds are visible on the surface of the thickened membrane. In some instances, these have the consistence of cheese, and are analogous to tuberculous matter; in others, they are fibro-calcareous, and exceedingly hard. *Thirdly.* By far the most frequent and peculiar characteristic of the second stage of the disease is the formation of membranous bands between various parts of the tympanic cavity. These bands are at times so numerous as to occupy nearly the entire cavity: sometimes, they connect the inner surface of the membrana tympani to the internal wall of the tympanum, to the stapes and to the incus. They have also been detected between the malleus and the promontory, as well as between the incus, the walls of the tympanum, and the sheath of the tensor tympani muscle, as well as between various parts of the circumference of the fenestra rotunda. But the place where these adhesions are most frequently visible is between the crura of the stapes and the adjoining walls of the tympanic cavity: this was the case in 24 instances out of 120 dissections. These bands of adhesion sometimes contained blood and scrofulous matter.



In the *third stage* of inflammation of the membrane it becomes ulcerated; the membrana tympani is destroyed, and the tensor tympani muscle atrophied; the ossicles are diseased, and ultimately discharged from the ear, and the disease not unfrequently communicates itself to the walls of the tympanum, affecting also the brain, and other important organs.

Such are the appearances described by Mr. Toynbee.

**Treatment.**—When a discharge has existed for any length of time from the meatus auditorius externus, it is important not to suppress it too hastily, as the irritation may be transferred elsewhere, and to parts of greater importance. In all cases, it is essential to attend to the constitutional condition, and if there be evidences of a strumous complication, as there frequently is, the tone of the system must be improved by the remedies elsewhere recommended for the removal of scrophulosis,—and especially by the use of iodine, as the iodide of iron, singly or combined with vegetable bitters, along with appropriate diet, change of air, &c.

In regard to the local treatment by injections, difference of sentiment exists. It may be questioned, indeed, whether they can be of much advantage, where the disease affects chiefly the bony portions, and especially the mastoid cells. Injections of warm water, or of warm milk and water, are sufficient, in the first instance, and perhaps they are at all times safest. The facts, indeed, recorded by authors of acute symptoms followed by caries having supervened on the use of a blister, or a seton, or on astringent injections, ought to induce caution in regard to officious treatment of all kinds. It has been advised, that weak injections of acetate of lead, or of sulphate of zinc, or of any of the ordinary astringents, should be continued for months, rather than that we should attempt to arrest the otorrhœa suddenly; gentle counterirritation may also be established behind the ear, by the ointment of tartarized antimony, or by croton oil, or simply by rubbing salt around the external ear.

Where the discharge proceeds from the middle ear and passes through the membrana tympani, it too frequently resists all treatment. In such case, the efforts must be restricted to keeping the ear clean by means of warm emollient injections, wearing a piece of cotton loosely in the ear to absorb the discharge. Recently, Mr. Wilde, of Dublin, has advised, where granulations grow either from the membrana tympani or the walls of the tympanum, the application of the solid nitrate of silver.

Where the otorrhœa is accompanied by caries of bones, the same plan of treatment is advisable; and when encephalic symptoms occur, they must be met by the treatment recommended under Encephalitis. It would appear, consequently, that in many cases of otorrhœa, great mischief may be induced by officiousness on the part of the physician; whilst, in the majority of cases, his best-directed efforts prove rather palliative than curative; and hence he ought to proceed with much caution. “We have laid great stress,” says a recent writer, Dr. J. H. Bennett, “on the necessity, in chronic otitis, of acting cautiously and slowly, especially when it extends to the tympanum, being convinced,

that many of the inveterate cases met with in practice result from the ill-directed and hasty efforts made to effect a speedy cure of the disease by the injudicious use of too astringent injections, and the early employment of blisters, setons, &c."

Where it is not considered advisable to interfere actively with the discharge, the disagreeable fœtor may be very much diminished by appropriate injections of a disinfectant nature—as of weak solutions of chlorinated lime or chlorinated soda.

R.—Calcis chlorin. gr. v.  
Mucilag. acaciæ, fʒij.  
Aquæ rosæ fʒij.—M. et filtra.

R.—Liq. sodæ chlorinat. fʒss.  
Aquæ rosæ fʒij.—M.

## II. DEAFNESS.

SYNON. Cophosis, Dysecoia, Dysecœa, Baryecoia, Surditas; *Fr.* Surdité, Dureté de l'Ouie; *Ger.* Taubheit, Nervöse Taubheit, Schwere Gehör.

The term deafness is usually applied both to partial and total loss of hearing; but by many *dysecoia* is used for the former, and *cophosis* for the latter. It is, of course, dependent upon numerous pathological causes, which may affect either the external, the middle, or the internal ear, the optic nerve, or the part of the encephalon from which it originates. It may likewise be either accidental or congenital. In the latter case, dumbness is a necessary consequence. The cases, that require the attention of the physician, belong to the former, whilst the latter is an object of active and efficient philanthropy in the different establishments for these unfortunates.

**Causes.**—The causes of deafness that concern the *external ear* are such as interfere with the due propagation of sonorous vibrations to the membrana tympani. There are three modes in which such vibrations can be conveyed thither: *first*, through the air in the meatus auditorius externus; *secondly*, by the vibrations being communicated along the pavilion and the soft parietes of the concha; and *thirdly*, through the bony parietes. For perfect audition, where the sense has been enjoyed, it is indispensable that all these parts should be in a state of integrity; and that no impediment should exist to the free transmission of the sonorous vibrations through the air to the membrana tympani. Yet singular cases of malformation are recorded by Professor Mussey, of Cincinnati, the Rev. Dr. Parker, of Macao, and Dr. Allen Thomson, of Edinburgh;—some of which have been referred to by the author elsewhere (*Human Physiology*, 6th edit., i. 170, Philad., 1846,) in which there was no evidence of external ear, and yet hearing existed. In one case, the subject of which was twenty-seven years of age, although the sense of hearing was too obtuse for low conversation, he could hear sufficiently well to prosecute his business,—that of a bookseller,—without material inconvenience. In such case, the sonorous vibrations must have impressed the nerves distributed to the integument of the head, and the impression been conveyed along the afferent nerves—chiefly, perhaps, those of the fifth pair—to the encephalon. Where such a defect exists, it can be understood that by means of a rod of wood or iron, one end of which is placed in contact with a sonorous body in vibration, and the other extremity with the ear, the sound may still be appreciated.

For perfect hearing, then, the meatus must contain air, and no impediment—as hardened cerumen, pus, polypus, &c., must be present to prevent the free passage of the sonorous vibrations to the membrana tympani.

*Secondly.* The causes of deafness may be seated in the middle ear; and they may be of various kinds. The membrana tympani may not be entire; yet this may not destroy the hearing, although it is apt to impair it more or less. We frequently see persons blow the smoke of tobacco through the external ear, yet they are not deaf; and cases are on record where not only have persons heard distinctly when the membranes of both ears have been destroyed, but they have appreciated music accurately, a fact which is fatal to the notion of Sir Everard Home and others, that the membrane is intimately concerned in the appreciation of musical tones.

Again, the lining membrane of the tympanum may be inflamed, and be the seat of muco-purulent secretion, as described under CHRONIC INFLAMMATION OF THE EAR; or the inflammation may cause adhesion of the sides of the Eustachian tube to each other, so as to prevent air from passing from the pharynx into the tympanum, and be the cause of deafness. In 2000 cases of disease of the ear, tabulated by M. Kramer, stricture of the Eustachian tube was found in a decided degree in the ratio of only 1 to 71; and of 1 to 7 of all the diseases of the middle ear. Complete closure of the tube is very rare.

The ossicles may also become affected with caries, and be discharged; yet, of itself, the loss of these does not necessarily induce complete deafness, unless the base of the stapes is destroyed, when the membrane of the foramen ovale is apt to be injured, and the perilymph to escape. The case then becomes hopeless. Whilst the perilymph remains, hearing may exist—the sonorous vibrations passing through even a perforated membrana tympani, and being propagated along the air in the middle ear to the membrane of the foramen rotundum, and thence to the internal ear.

*Thirdly.* The causes of deafness which are seated in the internal ear are least understood; but should anything lead to the loss of the perilymph or endolymph, to the obliteration or diminution of the vestibule, cochlea or semicircular canals, or to pressure upon the ramifications of the auditory nerve, impaired hearing would be the necessary consequence.

*Fourthly.* The proper auditory nerve—*portio mollis* of the seventh pair—may be compressed in some part of its course within the cranium or in the meatus auditorius internus, and many cases of deafness, originating in this manner, are on record. As, too, in the case of the optic nerve, the auditory has been affected with atrophy, but, as M. A. Bérard has remarked, difficulty may exist in determining whether the atrophy has been the primary cause of the deafness, or simply the consequence of inaction of the nerve.

*Fifthly.* Deafness may undoubtedly be owing to a morbid condition of the part of the encephalon concerned in the appreciation of sounds. This condition and its mode of production may vary. It may be owing to febrile affections accompanied by encephalitis; to extravasation of blood or fibrinous matter about the encephalic origin of the auditory

nerves, to concussion of the brain, &c.; and we not unfrequently, therefore, notice it suddenly produced in one ear without any accompanying paralysis.

Of 1074 cases of disease of the internal ear, referred to by M. Kramer, 1028, or rather more than one half of 2,000 cases of disease of the ear, tabulated by him, are ranked as cases of nervous deafness, and of these, hereditary predisposition existed in one case in six.

The same tables show, that males were affected nearly twice as frequently as females. Of the 2000 cases, one ear was affected in 361; both ears in 1639.

It is often exceedingly difficult to detect the precise organic cause of the deafness; and certainly no one is fitted for the task unless he is a good physiologist,—whereas the world at large will submit to be gulled by the most ignorant pretenders, who may call themselves “aurists” or “aural surgeons.”

**Diagnosis.**—It is needless to expatiate on the method of detecting whether a person be hard of hearing. In one who has attained the speaking age, there can be but little difficulty. The infant, which is born deaf, gives little or no indication of it for months; and it is only when it ought to exhibit evidences of appreciating sounds, that the painful idea flashes across the mind of the parent, that the child may have been born deaf. In a short time, the truth of this impression becomes confirmed or negatived. The most convenient standard for measuring the power of hearing — *acoumeter*, — is the ticking of a watch, which, if loud, may be heard at the distance of thirty feet.

When deafness is noted, or making progress, it is essential to inquire into its probable causes. By raising up the pavilion so as to straighten the canal, and directing a bright light into the meatus, it can generally be readily seen, whether any extraneous body prevents the transmission of sonorous vibrations to the *membrana tympani*. If not, a *speculum auris* becomes necessary,—indeed, it may be as well to employ it always, if at hand. At times, a discharge takes place from the lining membrane of the meatus, the seat of which can be detected, so that it need never be confounded with one from the middle ear—as in cases of otorrhœa; especially as the source of the latter is known by directing the patient to hold his nose, close his mouth, and make a forcible expiration. If the membrane be perforate, the air will be heard to pass out through the *meatus auditorius externus*.

If no cause of deafness appears to exist in the external ear, an inquiry may be made into the condition of the Eustachian tube. The throat must be inspected to discover whether any tumour of the tonsils, pharynx or nares may press upon their pharyngeal opening; or whether ulceration exists, or has existed there. Scarlatina is a common cause of deafness, which it causes by the extension of the throat-affection along the tube. Should nothing morbid be observed on inspecting the pharynx, an appropriate sound may be passed into the Eustachian tube, by which its more or less pervious condition, and the presence or absence of inflammation, may be judged of. Forcing air into the middle ear in the manner already mentioned, by the patient himself, or by means of the catheter and apparatus described in ano-

ther work, (*New Remedies*, 5th edit. p. 374, Philad. 1846), will also be an important aid in the diagnosis.

By placing the ear of the observer over that of the patient whilst air is driven from the air-press through the catheter introduced into the tube, the sound of the air impinging against the membrana tympani will be distinctly heard if the tube and the cavity of the tympanum be free.

Should inspection of the external and middle ear lead to no judgment of the cause of deafness, attention must be directed to the condition of the internal ear. Between this and a lesion of the middle ear it is difficult to discriminate. M. Bérard remarks, that the lesions of the middle ear are almost always the result of inflammation, which is manifested by more or less acute pain, of greater or less duration, accompanied, at times, by fever and suppuration, and other symptoms; whilst the morbid conditions of the internal ear that cause deafness occur rather without inflammation, pain or fever. The history given by the patient M. Bérard esteems to be most important, although it will never admit of our arriving at a positive diagnosis, inasmuch as we cannot pronounce as to what part of the labyrinth is affected, or what is the character of the affection.

It is a matter of great moment, however, to be able to determine, whether the nerve or the portion of the encephalon connected with it, is diseased. If, when a watch is placed in contact with the teeth of a deaf person, its ticking is not audible, or imperfectly so, the defect is evidently in the nerve—it is a case of *nervous deafness*. Of this, M. Kramer, in his first work, made two divisions—*torpid*, when there was no form of tinnitus or abnormal sounds heard; and *erethitic* when there was. Since then, however, satisfied that tinnitus in every form may accompany all aural diseases, and that all such diseases may exist without it, he has given up the division, and comprehends both under the head of “simple nervous deafness.”

Every case of deafness, unless caused by some extraneous body or transient phlegmasia, is apt to become worse, although it may remain stationary for a very long period—at times, for a series of years;—the hearing being subject to transient changes of better and worse, without any perceptible cause, and deluding the patient with hopes of ultimate amelioration.

**Treatment.**—Where inflammation affects the external ear, the effect it induces on the hearing can be but temporary, and will cease with the cessation of the inflammation. When indurated cerumen is present in the meatus, simply syringing the ear with warm water, or warm soap and water, will remove it. The author generally directs a teaspoonful of warm soap and water to be poured into the ear for two nights in succession; and on the following morning the syringe to be used, which generally dislodges the cerumen with facility. Where polypous growths exist, they should be removed; and if there be a chronic discharge from the ear, emollient injections may be thrown in several times a day, and counterirritation be established behind the ear; with attention to the general health, especially if the patient be of a strumous habit.

Where the Eustachian tube is inflamed, the treatment, where prac-

ticable, must be directed to the primary seat of the disease; for it is generally a secondary affection. Watery injections into the pharyngeal orifice of the tube have been advised by some aurists; whilst M. Deleau prefers the air *douche*, as he terms it; but it would be better, perhaps, if no topical remedies were applied to the tube. The treatment should be general, and antiphlogistic to a degree dependent upon the extent of the inflammation. In chronic inflammation, revellents, as the preparations of iodine, may be serviceable, especially if there be any scrofulous or other *vice* in the system.

Should the tube be obliterated from any cause, perforation of the *membrana tympani* has been advised; but the success has been equivocal. It generally happens, that the lining membrane of the cavity of the *tympanum* is diseased at the same time, and, therefore, perforation of the membrane is not likely to be productive of more than temporary benefit, if of that. Moreover, it readily cicatrizes; and the operation is now rarely, or never practised. For the like reasons, the introduction of metallic sounds has not been productive of permanent advantage, whilst, except in careful hands, they may do much injury.

The ratio of cures in stricture of the tube, in the cases observed by M. Kramer, was low; whilst obliteration of the tube is classed by him with deaf-dumbness as "unconditionally incurable diseases."

Should the occlusion be occasioned by morbid growths in the throat, or enlarged tonsils, they must of course be removed.

When deafness is dependent upon inflammation, acute or chronic, of the middle or the internal ear, the treatment will consist in the methods recommended in previous pages. (See ACUTE INFLAMMATION OF THE MIDDLE EAR.)

In nervous deafness, attention has been chiefly directed to local remedies; but before they are had recourse to, a minute investigation should be made, whether the affection may not be dependent upon some encephalic lesion, which might render them improper. In presumed paralysis or torpor of the nerve, electricity and galvanism would be suggested; "but chiefly"—Dr. Copland remarks—"by those who are adepts in these departments of quackery." Recently, M. Kramer, who has been esteemed a high authority in aural medicine, has affirmed, that the magneto-electric, or electro-magnetic current acts decidedly as an excitant to the organ of hearing; that this action is strongest when there is an affection of one or both auditory nerves, and the magneto-electric current is conveyed from the mouth of the *Eustachian tube* to the external auditory passage of the same ear, instead of from one auditory passage to the other. Still, he infers, that it does not appear to possess any peculiar strengthening action on the auditory nerves. On the contrary, great care is needed in the employment of the remedy not to over-excite the affected nerves; that the application of magneto-electricity should always be made with the greatest caution, and in the mildest manner; and that it should always be given up when decided aggravation of the *tinnitus* takes place, and improvement of the hearing distance is not effected, or when effected is again lost.

Under the use of electricity, galvanism or magnetism, singly or combined, the hearing is, at times, temporarily benefited; but the

author never knew any permanent good from it. Moxas, issues, setons, blisters and every form of counter-irritant have been used, but not with more advantage, perhaps. Testimony, in regard to them is, indeed, most discordant. Irritating or acrid injections, or applications to the external meatus, are used by some; but they are objected to by MM. Itard and Kramer as injurious; and the author has not seen any advantage to compensate for the irritation and inconvenience they occasion. Excitants, applied around the ear, can certainly effect everything which they are capable of accomplishing. The applications that have changed the face of aural medicine of late years are those made through the Eustachian tube, and especially the air and liquid *douches*, as they have been called. Forcing air and tobacco, and other vapours into the tube, by filling the mouth with them has been long practised; but the plan of injecting them by catheterism of the tube and an appropriate apparatus is of modern date. M. Kramer regards this as the only method from which good can accrue. He condemns, without restriction, all general and topical agencies that have been used, regarding them as either impotent, injurious, or improperly and irrationally employed, and retains only one means suggested by M. Itard—the introduction of the vapour of acetic ether into the middle ear. The apparatus of Messrs. Itard, Kramer, Pilcher and others for catheterism of the tube, and those of M. Kramer for the introduction of the vapour, are given by the author in the work already referred to, with the accidents that occasionally arise from them. It would appear, however, that M. Kramer himself has recently abandoned the vapour of acetic ether, which he formerly recommended so strongly, because he has found it too stimulating, and now recommends the vapour of *aqua assafœtidæ simplex*, of musk, of *aqua amygdal. amaro sine spiritu parata*, and similar preparations,—slightly excitant solutions, in other words.

After all the revival, therefore, that had taken place in regard to aural medicine and surgery, chiefly through the writings of MM. Deleau, Itard, Kramer and others, it would seem, that but little permanent benefit has resulted from the new methods of treatment; unless where there has been partial obstruction of the Eustachian tube; and then, perhaps, the most valuable agent is the elastic gum catheter of M. Deleau, which the patient can be readily taught to pass into the tube through the nose, when the outer extremity can be bent down and inserted in the mouth, and air be thus blown, by the patient himself, into the cavity of the tympanum. Temporary improvement in hearing follows the insufflation; and as a palliative method, where nervous deafness exists, it may be serviceable. Every honest surgeon must, however, express his disappointment in the methods that were so strongly urged some years ago; and admit, that the benefit derived from them in nervous deafness has been exceedingly limited; yet the mercenary and unprincipled have reaped a rich harvest from the noise which they created, by acting upon the credulity of the public.

Where palliation is required in cases of nervous deafness, the flexible ear-trumpet is the best of instruments. It is conveniently worn around the neck, and permits conversation to be carried on in any case where ear-trumpets in general are serviceable.

## CHAPTER III.

### DISEASES OF THE NOSE.

SYNON. *Fr.* Maladies du nez; *Ger.* Nasenkrankheiten.

MOST of the affections, to which the Schneiderian membrane that lines the nasal fossæ and the cavities communicating with them is liable, fall under the domain of surgery. There are some, however, which demand consideration here.

#### I. INFLAMMATION OF THE SCHNEIDERIAN MEMBRANE.

SYNON. Rhinitis, Inflammatio narium; *Fr.* Rhinite; *Ger.* Nasenentzündung.

The inflammation of the lining membrane of the nose, which is usually met with, may be of two kinds,—one constituting what is commonly denominated Nasal Catarrh or Coryza:—the other Ozæna; each of which will demand a distinct consideration.

##### I. NASAL CATARRH.

SYNON. Catarrhus narium, C. nasalis, Rhinocatarrrhus, Angina nasalis, Coryza, Gravedo, Rhinitis, Cold in the head; *Fr.* Rhinite, Rhume de cerveau, Catarrhe nasal, Enchifrènement; *Ger.* Schnupfen, Nasenkatarrh, Blennorrhœe der Nase.

Nasal catarrh is extremely common, and, although generally of short duration, is a distressing affection. It is pathologically an inflammation of the lining membrane of the nasal fossæ; and, like other inflammations, may be *acute* and *chronic*.

**Diagnosis.**—The disease generally commences with a sense of disagreeable dryness in the nasal fossæ, accompanied by pricking or itching, which occasions repeated sneezings. These phenomena indicate the first stage of inflammation of a mucous membrane,—that of arrest of secretion. Soon, however, a discharge of thin transparent mucus takes place, having a saline taste, and which, in process of time, by its repeated discharge or by the constant act of blowing the nose, or both, gives occasion to redness and excoriation of the terminations of the nostrils and of the upper lip. At the same time, the sense of smell becomes impaired or depraved, or for the time abolished. By the extension of the inflammation, the eyes may become watery and the conjunctiva injected; and the sinuses communicating with the nose may be the seat of more or less pain. At times, indeed, the frontal sinuses especially are the seat of considerable suffering. Whilst the inflammation continues, owing to the engorgement of the mucous membrane, the passage of the air through the nasal fossæ is rendered difficult, if not impracticable. It does not often happen, however, that this occlusion continues for any length of time, but passes away, to return at longer or shorter intervals until the inflammation abates.

If the affection be severe, the constitution sympathizes, and the patient suffers from general discomfort, and at times from febrile indisposition. In the course of two or three days, however, the inflammatory condition begins to yield; the discharge becomes more consistent, is often extremely tenacious, and of a yellowish or greenish hue,



and a faint, spermatic odour. In this stage it dries rapidly, and forms crusts, which obstruct the nasal fossæ so as to prevent the passage of the air. Whenever such obstruction occurs from any cause, the voice acquires a nasal character.

In infants, owing to the narrowness of the nasal fossæ, they become readily obstructed; and great distress is experienced. At times, air can still pass, but imperfectly, and owing to the sound made by its transit through the fossæ, the affection has received the name of *Snuffles*—*Gravedo neonatorum*; but when the passages are entirely obstructed, the child is compelled to sleep with the mouth open; the respiration becomes difficult, and the agitation is often considerable. This is more marked when the child is put to the breast: the air cannot of course pass through the nose, and whilst the mouth is applied to the nipple, respiration is arrested, so that it is compelled to desist; and it can be readily understood, that if the affection were to continue, it must interfere materially with nutrition. There is also a form of coryza with which the infant is occasionally affected, along with diphtheritic stomatitis and pharyngitis, and which is characterized by a fetid sanious discharge, and by the expulsion of grayish false membranes. This form of the disease has been well described by MM. Rilliet and Barthez. Fortunately it is rarely seen in this country.

Nasal catarrh seldom terminates in less than from 7 to 10 days. It is liable, too, to exacerbations, the patient believing, and such may be the case, that he has taken fresh cold. It rarely passes to the chronic stage. Some persons are constantly affected with a kind of gleet or blennorrhœa from the Schneiderian membrane—*Rhinorrhœa coryza benigna*. It is very common, as the coryza disappears, for inflammatory irritation of the tracheal and bronchial mucous membrane to supervene—as indicated by cough, mucous expectoration, and other evidences of slight pulmonary catarrh.

Nasal catarrh is an affection of no consequence, except in the infant, and even then simple cases are almost devoid of danger. The diphtheritic form is, however, an evidence of a condition by no means favourable.

**Causes.**—Nasal and pulmonary catarrhs are the great diseases presumed to be produced by cold, and especially by its partial and irregular application. The same effect the author has observed to result in his own person from the partial and irregular application of heat. It is induced too, at times, to a slight degree, by irritating vapour, as smoke, and by snuff; and in particular idiosyncrasies to an excessive degree by powdered ipecacuanha. It is an accompanying phenomenon of measles, and of influenza; indeed, there is no membrane of the body, which is so liable to inflammation.

Dr. Klencke—it is said—has succeeded in communicating coryza to healthy animals by inoculating them with the cells of that disease; and he mentions as an important practical fact, that the cells of recent coryza are readily destroyed by chlorinated lime; but if the disease becomes chronic, the cells disappear, and are replaced by the conservæ of ozæna;—yet no one believes that nasal catarrh is communicable.

**Pathological Characters.**—There is no opportunity for discovering those in the adult, as the disease never terminates fatally. In infants

who have died during the acute stage, the membrane has been found more or less red, injected, and blackish; thickened in places and softened. In certain cases, it has been found lined by a false membrane. In the examination of fatal cases by MM. Rilliet and Barthez, the coryza coincided three times with pseudo-membranous inflammation of the pharynx and larynx, and once with double pneumonia, gangrene of the skin, and chorea. In the observations of M. Bretonneau and others it coincided with pharyngeal and laryngeal diphtheritis.

In the chronic stage, the membrane is denser, unequal, rugous or mammillated on its surface, and so much thickened, that the nasal canal has been partially obstructed or even obliterated. It is generally softened, of an opaque white, or even blackish, or slate coloured.

**Treatment.**—An ordinary case of coryza requires little or no treatment; and, indeed, rarely receives any. Putting the feet in warm water, or sinapised water; confinement to bed; abstinence from exciting diet; and a gentle cathartic, constitute the treatment for more severe cases. In coryza, as well as in pulmonary catarrh, it is a common practice to drink copiously of tea, gruel, or other diluent, which may keep up an equable perspiration, and in this manner be beneficial. Dr. C. J. B. Williams, in the article *Coryza*, of the *Cyclopædia of Practical Medicine*, is of opinion, that diluents act by diminishing the acrimony of the discharge from the Schneiderian membrane, by dilution. It is the acrimony of the discharge, he thinks, which reacts on the membrane, and keeps up the inflammation and its accompanying disagreeable symptoms; and under this view he recommends a total abstinence from liquids. "To those," he says, "who have the resolution to bear the feeling of thirst for thirty-six or forty-eight hours, we can promise a pretty certain and complete riddance of their colds, and, what is perhaps more important, a prevention of those coughs which commonly succeed them. Nor is the suffering from thirst nearly so great as might be expected. This method of cure operates by diminishing the mass of fluid in the body to such a degree, that it will no longer supply the diseased secretion." [?] This course, however, as M. Grisolé suggests, is a real punishment inflicted for a disease of little moment.

Should the discharge irritate the nose and lips, they may be anointed with olive or almond oil, or with any of the bland ointments or lip-salves.

In the coryza of children, the dried mucus should be removed by a piece of twisted rag, and the interior of the nose anointed by any of the agents just mentioned, applied by means of a camel's-hair pencil. The child must be fed with a spoon, to permit breathing to be accomplished, as the mouth does not embrace the spoon as it does the nipple.

In diphtheritic coryza, the same general and topical agents are required as in diphtheritic stomatitis, and diphtheritic pharyngitis.

## 2. OZENA.

SYNON. Rhinitis ulcerosa, Pyorrhœa nasalis, Coryza entonica, C. ozænosa, C. ulcerosa, C. virulenta, C. purulenta, C. maligna, Ulcus narium fetens; *Fr.* Ozène, Coryza ulcèreux, Rhinite ulcèreuse, Punaisic; *Ger.* Nasengeschwür, Stinkendes Nasengeschwür, Stinknase.

This form of inflammation of the Schneiderian membrane is cha-

racterized by the presence of ulcerations. Generally, and etymologically, ozæna signifies an ulceration of the membrane accompanied by a fetid discharge; but it is proper to state, that some of these ulcerations are fetid, and others not; and, accordingly, they have been divided into *fetid* and *nonfetid*.

**Diagnosis.**—Ulcerated coryza is sometimes a consequence of the acute; at other times, it presents itself with all the phenomena of chronic coryza. The patient appears to be constantly afflicted with cold in the head, and the discharge, on blowing the nose, consists of a copious, thick, yellowish or greenish purulent matter, mixed with mucus. There is a feeling of discomfort, but rarely of pain, in the nasal fossæ, which are more or less obstructed with this inspissated matter. This is the nonfetid form of coryza.

In the more serious or fetid form, the discharge is ichorous, fetid, and the odour is exhaled with the air of expiration. At times, this is almost insupportable. It has been compared to that of sweaty feet, or of anatomical macerations; or of a bed-bug, whence the French name, *punaisie*, given to it; or to that of decayed cheese, which has been accordingly used mixed with offensive oils by malingerers to simulate the disease, a portion of it being put up the nostril. Occasionally, the ulceration implicates the bones of the nose, which become carious, and are discharged, so as ultimately to cause deformity. The affection is always tedious, and has but little tendency to heal. Although not often dangerous, it is exceedingly inconvenient and repulsive.

**Causes.**—Ozæna—as already remarked—may be a consequence of coryza. It has followed, too, the operation for the removal of nasal polypus by the forceps. It would seem, however, to have been most frequently the result of syphilis, and in such cases it is apt to be destructive to the bones and cartilages of the nose. At times, it would appear to be dependent upon some scrofulous *vice* of the constitution.

**Pathological Characters.**—The Schneiderian membrane is found to be thickened, tumid, mammillated, softened, detached by fetid pus, and destroyed in different parts. The ulcerations may be superficial, or deep-seated, so as to implicate the bones, which may exhibit caries, mollescence, or necrosis. Puriform, bloody mucus, and dark-coloured crusts, which most commonly exhale a fetid odour, obstruct the nasal fossæ.

**Treatment.**—At the commencement of ozæna, should phenomena of activity exist, they must be met by antiphlogistics, and the emollient applications advised under CORYZA. In this manner, the inspissated and altered mucus may be removed. The finger should never be employed for this purpose, as it is apt to add to the extent of the mischief.

Various local applications have been made to wash away the discharge, correct the fœtor, and induce a new action in the ulcerated parts. With this view, solutions of chlorinated lime or soda, or creasote, or simple sulphate of alumina, have been prescribed, the last of which is one of the best antiseptics and detergents that can be employed. Any of these or of the other agents recommended in pseudo-membranous inflammation of the mouth (vol. i. p. 23,) may be used according to the formulæ there given; or an ointment of chlorinated



and the blood easily passes through the parietes of the vessels by diapedesis. It is rarely the result of rhexis or rupture of vessels.

**Diagnosis.**—Hemorrhage from the vessels of the pituitary membrane is generally preceded by local symptoms,—as itching or sense of fulness in the nose, and sneezing, as well as by general phenomena denoting determination of blood to the head,—such as flushed countenance; beating of the carotid and temporal arteries; headache, vertigo, and sense of weight or fulness at the root of the nose. Not unfrequently, too, these local phenomena are accompanied by increased action of the heart and arteries, and often by a decided febrile movement. These prodromic symptoms precede especially the active hemorrhage of youth—*Epistaxis juniorum*, *E. arteriosa*; but they are not uncommon where the hemorrhage is symptomatic. The blood usually flows from the nasal fossæ of one side only, and may be detected by first closing one nostril by the finger pressed against it, and then the other.

Occasionally, the hemorrhage occurs but once. More commonly, after having been arrested either spontaneously or by art, it recurs at longer or shorter intervals, sometimes almost periodically; and greatly reduces the powers. Usually, the blood is florid, and flows rapidly, but not generally for any great length of time, the quantity discharged not exceeding an ounce or two. In rare cases, however, the discharge is very copious: at times, too, if the patient be lying upon his back, and especially in children, the blood flows into the throat by the posterior nares, and is swallowed; so that the practitioner may be deceived, and be under the impression that the hemorrhage has ceased. The author has seen more than one case in which a nasal hemorrhage, that had given occasion to vomiting, had been mistaken for hemorrhage from the lining membrane of the stomach. Occasionally, too, blood escapes from the mouth on waking, especially if endeavours be made to clear the fauces by hawking.

**Causes.**—Although epistaxis may occur at all ages, under the influence of certain exciting causes, and perhaps to an equal degree in both sexes, it is seen most frequently at the age of puberty, when irregular determinations of blood are so common in the important changes going on at that period. Generally, under such circumstances, it is of no consequence; but if it should go to excess, it may require attention, especially if, instead of being an evidence of polyæmia, it be dependent upon an impoverished state of the blood, with diminished cohesion of the parietes of vessels, and a defective general formation,—in which case there may not only be danger from the flow of blood itself, but of hemorrhage from other parts—as hæmoptysis. In the middle stages of life, it is not common, except from blows, or other accidental causes; but from the age of 40 upwards, it is again more common, and not unfrequently indicates a tendency to cerebral hemorrhage. It is an observation as old as Hippocrates, that they who have been much subject to epistaxis when young, are, at a later period, liable to hæmoptysis and phthisis pulmonalis, and not unfrequently they suffer from hemorrhoids. The immediate exciting causes are often appreciable,

—a blow received on the nose; blowing the nose; the exercise of running, coughing, or any violent effort that prevents the return of blood from the head, whilst its flow thither is favoured,—hence stooping, or lying with the head low, may give occasion to it. The most distressing cases of hemorrhage from the nose generally occur, however, as evidences of lesions elsewhere. It is by no means uncommon in malarious diseases where the spleen is enlarged; and is seen also where other solid viscera, especially the liver, are indurated, and so modified in their nutrition as to interfere with the circulation of blood through them. In such cases, it is often very difficult to arrest the flow. A recent German writer, M. Most, affirms, that in chronic liver diseases, the blood in old people often flows from the right nasal cavities; whilst in chronic affections of the spleen, it proceeds from the left. The author's attention has not been directed to this point. In amenorrhœa, epistaxis is by no means unfrequent; and often relieves the anomalous symptoms, especially those referable to the encephalon, which are the results of the irregular hyperæmia thus induced. The same may be said of it as an epiphænomenon in febrile affections—inflammatory and adynamic,—of which conditions it is often an important symptom. In eruptive fevers, it is very usual; and, in them, also, may be an index of these opposite pathological states. Its frequent occurrence in whooping-cough is owing to the mechanical influences referred to above.

**Pathological Characters.**—There is no organic lesion that properly belongs to epistaxis.

**Treatment.**—This must resolve itself into, first, that which is required during the flow; and, secondly, that which is necessary after it has been wholly or mainly arrested.

1. In the generality of cases,—of young persons more especially,—the hemorrhage ceases after the loss of a greater or less quantity of blood; and the attention of the physician is rarely required, except to prevent its recurrence. Whilst the flow continues, the head should be kept elevated; and the new impression, induced by the application of cold to the head or to the nape of the neck, often modifies the circulation in the nose, and appears to arrest the hemorrhage. The application of a key to the nape of the neck is a popular remedy, that acts in this manner; or cold water may be dashed upon the face. Dashing cold water on the genital organs is said to have had an instantaneous effect in suppressing it.

Of late, a mechanical agency, which, it has been asserted, is a popular remedy for epistaxis in this country, has been strongly urged on the attention of the profession by M. Négrier, and has been made by him the subject of a communication to the *Académie Royale des Sciences* of Paris. The patient is made to stand up with the head elevated. The nostril, from which the blood flows, is compressed by the finger, and the corresponding arm is directed to be raised perpendicularly, and to be kept in that position for about two minutes. The hemorrhage, in M. Négrier's cases, was arrested in ten seconds from the moment of raising the arm. Two or three times only, of several cases, the epistaxis returned; but it always ceased on raising the arm.

It never, however, returned, if the person had lost from six to nine ounces of blood before the treatment was had recourse to. The explanation given by M. Négrier of this fact is as follows. When an individual stands in the ordinary posture, with his arms hanging down, the force required to propel the blood through his upper extremities is about half that which would be required if his arms were raised perpendicularly above his head. But, since the force that sends the blood through the carotid arteries is the same as that which causes it to circulate through the arteries of the arm, and there is nothing in the mere position of the arms above the head to stimulate the heart to increased action, it is evident, that a less vigorous circulation through the carotids must result from the increased force required to carry on the circulation through the upper extremities when raised. Cases have been published by others in which this plan has been successful. M. Négrier has found it equally serviceable in encephalic hyperæmia, and in cephalalgia with somnolency,—whenever, in other words, it is desirable to diminish the flow of blood to the encephalon. A severe attack of nasal hemorrhage, in which the flow took place from both nostrils, and was completely arrested by compressing them, and raising both arms above the head, has been published by Mr. John C. Davie. The patient had experienced ten different attacks of bleeding, and supposed he had lost on the whole a gallon of blood. On the last occasion he had lost more than a quart, besides what he had swallowed.

Should the hemorrhage not yield to these agencies, it may be necessary to throw astringent injections into the nasal fossæ, or to introduce, by insufflation through a quill, equal parts of powdered gum Arabic and alum; or to plug the anterior nares with lint, dipped or not in an astringent solution as of alum, or in a solution of creasote, or of red-oak bark, or of matico; and if the seat of the hemorrhage can be reached, the lint may be placed upon the extremity of a probe or stick, and be pressed against it. Another mode of accomplishing the object has been suggested by M. Miquel. It consists in introducing deeply into the nostril a piece of the intestine of the hog, arranged in the form of the finger of a glove, and by means of a syringe sending in water so as to distend the gut, retaining the water by means of a ligature. The dilated intestine compresses every part of the pituitary membrane with which it comes in contact; and should it press upon the part whence the blood proceeds, the flow will be arrested. It must be borne in mind, however, that although the flow may cease from the anterior nares, it may still pass into the throat by the posterior. The fauces must, consequently, be inspected to discover whether such be the fact; and if the hemorrhage continue, it is recommended to plug the posterior nares likewise. The plan, generally advised, is to pass a catgut through the nasal fossæ until it is seen in the throat; the extremity of the catgut is then drawn through the mouth, and a piece of sponge or lint is attached to it: the other extremity of the catgut is drawn out of the anterior nares, until the sponge or lint is made to press upon the posterior. In this manner, the flow of blood from both nostrils being prevented, a coagulum forms in the bleeding vessel or vessels, and the hemorrhage is arrested. Care is still

necessary, however, and especially in disturbing the plug, which must be suffered to remain until all risk of recurrence of the hemorrhage has passed away.

Although this and other plans for plugging the nostrils and arresting hemorrhage have been advised by most surgical writers and by M. Rochoux, it is proper to remark, that it has been disapproved of by others, owing to the great irritation it excites. Mr. Abernethy, indeed, affirms, that he had always failed in the operation from the excessive irritation induced in the muscles of the pharynx; but he farther states, that he had never seen a case, which could not be arrested by the introduction of a cylindrical plug of lint through the anterior nares, made sufficiently large to fill the tubular part of the nostril, first wetted, and wound round a probe, so as to give it the form of a bougie, long enough to allow it to be passed along the floor of the nose from the anterior to the posterior aperture, but not into the throat,—the probe being withdrawn when the lint had been fixed in this manner. The plug was permitted to remain in for three or four days.

2. After the hemorrhage has been arrested, its return can only be prevented by appreciating the pathological condition that caused it, and obviating this by appropriate means. In the cases that occur in youth, a saline cathartic, repeated once or twice a week, with light dry diet, will generally be sufficient; but if there be too much fulness of vessels, this may have to be reduced by previous bloodletting. Where the tendency to the affection is great, along with the purging, exercise should be taken regularly on foot; too long indulgence in bed be avoided; and, whilst there, the head should be elevated, and a diet not too nutritive be prescribed. On the other hand, should epistaxis occur in persons whose blood is thin, and the parietes of the vessels of diminished coherence, remedies are required, that are calculated to remove these conditions, such as creasote, dilute sulphuric acid, &c.; all the internal remedies, in fact, that are recommended under SCORBUTIC CACHEXIA; along with a nutritious diet. In such cases, Mr. Lane has found the oxide of silver, given in half grain doses twice a day, very efficacious. In cases of repeated recurrence or long-continued epistaxis, blisters to the nape of the neck—Dr. Condie affirms—have proved in general a very effectual remedy.



## BOOK VIII.

### DISEASES OF THE ORGANS OF REPRODUCTION.

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MANY of the diseases of the reproductive organs are, by common consent, referred to the domain of external pathology; but certain of them cannot be passed over in a treatise on internal pathology: some of these will, however, require but a brief notice.

#### SECTION I.

##### DISEASES OF THE MALE ORGANS OF REPRODUCTION.

The generative organs of the male—it must be borne in mind—consist *first*, of parts which secrete and preserve the sperm,—the fecundating fluid: and *secondly*, of the organ by which copulation is accomplished. The first consist of two similar glands,—the testes, which secrete the sperm or fecundating fluid from the blood; the excretory ducts of those glands; the vesiculæ seminales, which communicate with the vasa deferentia and the urethra; and the ejaculatory ducts, which convey the sperm from the vesiculæ seminales and vasa deferentia into the canal of the urethra near the neck of the bladder.

During the greater part of gestation, the testis is an abdominal viscus; but, about the seventh month of intra-uterine existence, it gradually descends through the abdominal ring into the scrotum, which it reaches in the eighth month. At times, however, it never descends, but remains in the cavity of the abdomen, giving rise, in many instances, to considerable mental distress, under the apprehension that the organ may be wholly wanting, which is rarely the case. The author has seen one or two cases, in which excessive suffering was induced by the testicle presenting at the inner abdominal ring, and becoming compressed and inflamed there. The application of leeches, soothing fomentations, and full doses of opiates, were, however, sufficient to remove the pain and inflammation. The detention of the testes, in these cases, did not at all interfere with the reproductive powers of the individual.

##### I. INFLAMMATION OF THE URETHRA.

SYNON. Urethritis, Inflammatio urethræ, Gonorrhœa, Blenorrhœa urethræ, Urethralgia, Medorrhœa virilis, Catarrhus urethræ, Phallorrhœa, Profluvium mucosum urethræ; *Fr.* Uréthrite, Urétrite; *Ger.* Entzündung der Harnröhre.

Inflammation of the urethra, unless caused by mechanical injury, is

not common except in the specific form, or in that induced by the application of the matter of impure blenorrhœa. The milder form, or that originating from common causes, has been termed *Gonorrhœa benigna seu simplex seu catarrhalis seu non contagiosa*, *Blennorrhœa*, *Blennorrhagia*, *Caulorrhœa*, *Catarrhus urethræ*; Ger. *Gulartige Tripper*, *Harnröhrenkatarrh*; the other, *Gonorrhœa venerea*, *G. syphilitica*, *G. virulenta*, *G. maligna*, *G. impura*, *G. contagiosa*; Fr. *Chaudépisse*; Ger. *Venerische Tripper*. The former occurs, however, so rarely, and in its general pathology and management resembles so much the latter, that, for convenience, the following description will be directed chiefly to the impure form.

**Diagnôsis.**—The ordinary symptoms of acute gonorrhœa are:—violent pain along the course of the urethra, or in front of the fossa navicularis, which differs greatly in character: at times, especially in the first few days, it may be rather a disagreeable feeling of itching than of pain: but, at others, violent shooting pains are felt, which are always greatly aggravated during the passage of the urine, giving rise to *ardor urinæ*, and to the French appellation *chaudépisse*, which is also applied by the French to the whole disease. In the course of two or three days after the impure connexion, and along with these symptoms, a mucous or muco-purulent discharge is observed from the urethra, which is, at first, of a whitish gray colour; and afterwards resembles a greenish or yellowish pus. It always tinges the linen. A grayish discharge, succeeding immediately to the application of an adequate cause, has been esteemed a distinctive character of simple inflammation of the urethra,—the venereal form requiring an incubation of three or four days, but it by no means follows, that simple urethritis should succeed so immediately. In severe cases, intense pain is experienced during erection, which is so severe, that the penis is drawn down by the frænum, and the patient is often compelled to rise from bed several times in the night under intense suffering. This appears to be owing to the unequal expansion of the corpora cavernosa, and the corpus spongiosum. It constitutes the *gonorrhœa cordata* or *chordee* of writers.

The disease may be accompanied by inflammation of the glands, swelling of the inguinal glands, orchitis and other affections, which demand an appropriate treatment.

When inflammation of the urethra is seated in particular portions rather than in others, certain symptoms are observed. When, for example, it is restricted to the fossa navicularis, the uneasiness is experienced there when the patient passes his urine; the glans is always more or less swollen, and the lips of the urethra are tumid and red. On pressing and rolling the urethra between the thumb and forefinger, a distinct thickening is felt, as if a portion of a bougie had been left in the canal, and the pressure gives occasion to much pain: the discharge is generally trifling, and is always presenting at the orifice. When the inflammation is seated chiefly in the part of the urethra between the glans and the bulbous portion, the patient may have no pain in the perinæum, but he experiences great suffering when he passes his urine; has frequent erections of short duration, and the discharge is more

copious than when the disease is seated more anteriorly. If, again, the disease be chiefly in the bulbous portion of the urethra, there is pain in the perinæum increased by pressure, a constant desire to void the urine, and frequent erections; the discharge is copious, and the size of the stream of urine diminished. When the membranous portion is chiefly affected, the pain is severe in the neighbourhood of the anus, and the desire to pass the urine is at times constant; the prostate and testicles may be enlarged and painful; and, it need scarcely be said, there is greater fear of the inflammation extending to those organs and to the bladder.

The duration of acute inflammation of the urethra varies. It may terminate in a week, or not for several weeks. Its average duration has been estimated by M. Andral at about 25 days. Occasionally, it becomes chronic; and may end in a simple blennorrhœa—*b. chronica*, *gonorrhœa mucosa*, or *gleet*—which does not stain the linen, and is devoid of all infectious properties.

M. Donné affirms, that he has detected a peculiar animalcule, of the order *infusoria*, in the vaginal mucus of certain females affected with a discharge from the vagina—at times of a suspected character, and at others the result of want of cleanliness. To this presumed infusorium he has given the name *Trichomonas vaginalis*. It is supposed, by MM. R. Froiep and Ehrenberg, to be a species of acarus; but MM. Gluge, Valentin, and Vogel suggest that it is not an animal; but separated ciliated epithelium from the uterus.

**Causes.**—The causes of urethritis may be various. Simple urethritis has been assigned to venereal excesses between entirely healthy individuals, as well as to masturbation. It certainly may be induced by external injury; and it is said to have been brought on by pressure on the perineal region during riding. It is not unfrequently, however, ascribed to this cause, when it has been contracted by impure connexion. It is caused, also, at times, by stricture of the urethra, and by the presence of a calculus in the passage. The introduction of a bougie, and the employment of stimulating injections have likewise given occasion to it. In experiments instituted with the view of noticing the effects that would be induced by the injection of stimulating substances into the urethra, phenomena have resulted, which could not be distinguished from those following impure sexual intercourse. This last is doubtless the most frequent cause of urethritis.

**Treatment.**—Simple acute urethritis requires the usual antiphlogistic treatment. Should the inflammation be intense it may be necessary to draw blood from the arm; to apply leeches to the perinæum, and, after they fall off, warm cataplasms or fomentations. Diluents may be freely allowed; they render the urine less irritating to the parts over which it passes. Demulcents—as flaxseed tea, mucilage of gun arabic, &c.—are usually prescribed, but they probably act as simple diluents; the mucilage being digested, and the watery portions alone being separated by the kidneys. Active cathartics are doubtful remedies. If they operate violently, the irritation excited by them is apt to be extended to the urethra by contiguous sympathy, and portions of those of the saline kind may be taken up into the mass of blood and be separated by the kidneys—thus rendering the urine more irritating. Castor

oil is the best cathartic that could be administered. Rest of body is, of course, all-important.

In cases of specific or impure gonorrhœa, the treatment will have to vary according to the intensity of the symptoms. If the disease be acute, it may require a similar antiphlogistic treatment to that of acute simple urethritis. No better treatment can, indeed, be pursued in the first stage of almost all cases, whenever there are signs of inflammation in any part of the canal. After, however, the active symptoms have passed away, another course, which has been termed, of late, "the revellent," becomes advisable. It consists in the administration of substances, which, either by their operation on the kidneys, or on the diseased mucous membrane itself, induce a new action in it. Difficulty at times exists in deciding as to the precise period at which the antiphlogistic measures should be discontinued, and revellents be prescribed, and this will of course have to be determined by the judgment of the practitioner. "When"—says M. Ricord—"the acute stage has ceased, although the patient may still continue to be troubled with erections, the penis be heavy and uneasy, and the lips of the meatus red and slightly swollen, I have recourse to those remedies, which are termed, *par excellence*, 'antigonorrhœal,' which I abandon, however, to have recourse, again, to antiphlogistics, should their employment occasion the least increase of inflammation."

Of the revellent antigonorrhœal remedies, one of the most commonly employed is copaiba. It has long been the custom to prescribe it in association with other substances, as in the following formula:—

R.—Copaib.  
 Sp. æther. nitric. aa fʒss.  
 Acaciæ pulv.  
 Sacchar. pulv. aa ʒj.  
 Tinct. lavand. comp. fʒij.  
 Tinct. opii, fʒj.  
 Aquæ destillat. fʒiv.—M.  
 Dose, a tablespoonful, three times a day.

Or in the following formula of Dr. Wallace.

R.—Copaib.  
 Cubeb. pulv. aa ʒj.  
 Liq. potass. fʒij.  
 Acaciæ pulv. ʒss.  
 Aquæ rosæ ʒvj.—M.

Some prefer a combination of cubeb and copaiba, in the proportion of one part of copaiba to two of cubeb. But many of the more recent writers, as MM. Ricord and Desruelles, give it alone. It may be taken in wine or lemonade, or be dropped in a wine-glassful of water, to which a small quantity of the compound tincture of gentian has been added. Many practitioners are in the habit of giving it in the dose of a drachm or more three times a day, from the very commencement of the disease; and, with the view of cutting it short at the very onset, it has been proposed by M. Ribes to administer as much as from two drachms to an ounce for a dose; but, although this treatment may prove successful at times, it has been found to augment the inflammatory symptoms and the discharge. Its efficacy is more exhibited, when given after an appropriate antiphlogistic treatment. To avoid

the disagreeable taste of the copaiba, it has been administered in the gelatinous capsules: the essential oil of the copaiba and the resin have likewise been given, but they have not been considered equal to the copaiba, as recommended above. It has been administered, also, by M. Velpeau, in the form of enema. Cubebæ have likewise been given under the same circumstances as the copaiba. The powder is commonly prescribed in doses of one, two, and even four drachms, repeated once or oftener in the day. Lozenges, boluses, and electuaries, have been prepared of them, and the London, Dublin, and United States Pharmacopœias have a tincture of cubebæ.

R.—Cubeb. ℥iv.

Alcohol. dilut. Oij.—M.—Dose, fʒj.—ʒij.

In consequence of the disorder sometimes produced by them, it has been proposed, that they should be given in the form of glyster, to the amount of one or two drachms of the powder, suspended in five or six ounces of an oleaginous mixture. To attain the same object, an oleo-resinous extract has been prepared, one-sixteenth part of which, by weight, possesses equal virtues with one part of the cubebæ,—five grains, three times a day, acting like the ordinary quantity of the powdered cubebæ. The volatile oil is sometimes given in the dose of ten or twelve drops, suspended in water by the aid of sugar. (See the author's *New Remedies*, 5th edit. p. 238, Philada. 1846.) It appears, that M. Diday has found copaiba act much more energetically when combined with cathartics. The formula, which he found the most successful, was the following:

R.—Copaibæ ℥ij.

Cubeb. pulv. ℥ivss.

Jalap. pulv. gr. xlvi.—M. et fiat electuarium.

One half to be taken in the morning, and the remainder in the evening.

The treatment, it is affirmed, rarely lasted more than five days, by which time a permanent cure was generally effected.

By some, creasote has been prescribed internally in the chronic stage of gonorrhœa and in gleet; and its beneficial effects have been thought to be more obvious than those of copaiba. It may be administered in doses of two drops on loaf sugar beaten into a syrup with water.

Injections are employed in gonorrhœa with two objects;—*first*, to cut short the disease, before the acute stage has commenced; and, *secondly*, to arrest it, after the acute stage has been appropriately treated by antiphlogistics. With the first view, the nitrate of silver may be used.

R.—Argent. nitrat. gr. ij.—x.

Aquæ destillat. fʒviij.—M.

The strength to be gradually increased so long as no irritation is induced.

M. Ricord is of opinion, that as long as there are no acute symptoms, and the evacuation of the urine occasions only slight irritation, whatever may be the duration of the disease, this abortive or ectrotic method may be used. The solution of the nitrate of silver, when employed with the former view, must be much stronger; from two to ten grains to the ounce—injecting about two fluidrachms into the urethra,

the penis being at the same time elevated, and compressed at about two inches from the orifice, and no urine permitted to be passed for half an hour after the injection. Mr. Ancell speaks in high terms of M. Ricord's ectrotic method, which has, in his hands, generally proved successful,—the disease having been arrested in its course, and no untoward circumstances having arisen.

After the acute stage has passed away, the solution of the nitrate, according to the formula on the last page, may be employed, or solutions of the acetate of lead,<sup>a</sup> corrosive chloride of mercury,<sup>b</sup> acetate of zinc,<sup>c</sup> sulphate of copper,<sup>d</sup> or chloride of zinc.<sup>e</sup>

<sup>a</sup> R.—Plumb. acetat. ℥ij.—℥j.

Aquæ destillat. f ℥viiij.—M.

<sup>c</sup> R.—Zinci acet. gr. x.—xx.

Aquæ destillat. f ℥viiij.—M.

<sup>b</sup> R.—Hydrarg. chlorid. corrosiv. gr. iv.

Aquæ destillat. f ℥viiij.—M.

<sup>d</sup> R.—Cupri sulphat. gr. x.—xv.

Aquæ destillat. f ℥viiij.—M.

<sup>e</sup> R.—Zinci chlorid. gr. viij.

Aquæ destillat. f ℥viiij.—M.

When all inflammatory signs have subsided, and the disease is altogether atonic, injections of wine have been advised with or without tannin.

R.—Vin. rubr. f ℥ij.

Aquæ rosæ f ℥iv.—M.

The quantity of wine to be gradually increased until it is used pure.

R.—Acid. tannic. gr. xvij.

Vin. rubr. f ℥vj.—M.

Iodide of iron has likewise been employed by M. Ricord with much success.

R.—Ferri iodid. gr. iij.

Aquæ destillat. f ℥vj.—M.

Creasote water has been much used under the like circumstances, in the way of injection, and small tents, wetted with it, have been introduced into the urethra.

It is frequently advantageous to vary the injection, as some patients bear one kind better than another: persons, according to Mr. Langston Parker, are found to be much benefited by port wine and tannin, who could not bear the weakest solution of the nitrate of silver. The aqua chlorini has, likewise, been used as an injection, either pure or diluted; and a distinguished German surgeon, Von Gräfe, frequently succeeded with the chloride of lime, after copaiba and cubeb had failed. He used it both in the form of pill,<sup>a</sup> and of injection.<sup>b</sup>

<sup>a</sup> R.—Calcis chlorin. ℥j.

Extract. opii gr. ix.

Mucilag. acac. q. s. ut fiant pilul. liv.

Dose, one, every two or three hours, gradually increasing until eight, ten, or twelve are taken every hour.

<sup>b</sup> R.—Calcis chlorin. gr. xxiv.

Aquæ f ℥vj.

Vin. opii f ℥ss.—M.

It has been the opinion of many observers, that gonorrhœa is commonly kept up owing to the contact of the two sides of the urethra; accordingly, it has been proposed to introduce, by means of an elastic gum catheter or bougie, a fine piece of lint into the urethra, and to let it remain there, removing it only at each period of making water,—the lint being employed dry, or soaked in any astringent injection.

The practice is said to have been followed by great success ; perhaps, however, in consequence of the new action excited by it in the parts, with which the lint was made to come in contact.

At times, the discharge continues in spite of the best-directed efforts ; in some of these cases, however, the use of an ordinary bougie is attended with excellent results ; and, in others, the application of the solid nitrate of silver, passed through an appropriate canula, is highly beneficial. Cases occur, however, in which the individual is compelled to submit to the inconvenience of more or less discharge for years, and, at times, it happens, that after a gleet has continued for a long period, it ceases spontaneously.

## II. INFLAMMATION OF THE TESTICLES.

SYNON. *Inflammatio testiculi, Orchitis, Orchiditis, Didymitis* ; *Fr.* Orchite, Inflammation du testicule ; *Ger.* Entzündung des Hoden, Entzündliche Hodengeschwulst, Hodenentzündung.

Not unfrequently we have accompanying, or succeeding to gonorrhœa, an affection of the testicle or rather of the epididymis, commonly known under the names *Hernia humoralis, H. Veneris, and Swelled testicle*, (*Fr.*) *Hernie humorale, Chaudepisse tombée dans les Bourses*. The affection would seem to be inflammation of the epididymis,—*Epididymitis, Epididymite blennorrhagique* ; and the dissections of M. Ricord show, that it is generally confined to the convolutions of the epididymis. It commonly occurs about the third week, and appears to be owing, at times, to sympathetic irritation ; and, at others, to extension of the disease from the urethra along the vas deferens.

In 125 of the 154 cases observed by MM. Gaussail and Aubry, the discharge diminished at the commencement of the attack ; and in 1 in 6 of 29 cases observed by M. D'Espine, the discharge underwent no change ; in 22, it was either increased, diminished, or suppressed ; and in 3 cases only, did it, after having been suppressed at the commencement of the affection, recur as the acute symptoms of orchitis subsided.

**Treatment.**—This consists in the employment of antiphlogistics,—as general and local bloodletting, the use of a suspensory bandage, and confinement to the horizontal posture. Warm fomentations and poultices afford great relief ; and much benefit has accrued from strapping the scrotum, so as to exert methodical pressure on the testicle. When the active inflammatory symptoms have passed away, the revellent remedies, which were previously improper, may be resumed, to remove the gonorrhœa, and should any thickening of the epididymis remain, the patient may be put upon a mild mercurial course, continued so as to affect the mouth gently.

Inflammation of the testicle may likewise be induced by common causes, or by mechanical injury ; but the treatment recommended above requires no modification. Of course, where no gonorrhœa exists, no antigonorrhœal remedies can be necessary. The author has met with one or two cases in young children ; and Mr. Curling gives two—one in an infant aged five months ; and the other in a boy two years old. Both yielded to appropriate antiphlogistic treatment.

## III. INFLAMMATION OF THE PROSTATE.

SYNON. Inflammatio prostatae, Prostatitis; *Fr.* Prostatite, Inflammation de la Prostate; *Ger.* Entzündung der Vorstherdrüse, Vorstherdrüsenentzündung.

Affections of the prostate gland, which are very common in old age—like most diseases of the urinary organs—are considered to fall in the domain of surgery.

**Diagnosis.**—Acute inflammation of the prostate is often an accompaniment of gonorrhœa, and is indicated by a sense of unusual weight and heat at the neck of the bladder; by pulsating pain,—at times, increased, on pressure, especially on examination by the rectum; pain in defecation, with a feeling as if the bowel had been imperfectly evacuated; frequent and urgent desire to void the urine, with great difficulty in so doing, and sometimes complete retention. Along with these symptoms, there is generally more or less constitutional disturbance. The affection usually passes off by resolution, but abscesses may form in and around the prostate, and give rise to a most distressing condition. When the urine gets access to these suppurations, the patient may be destroyed by fever and irritation, and incessant calls to discharge the urine.

**Causes.**—It has been remarked, that the prostate is sometimes inflamed as a consequence of gonorrhœa. The affection may also be produced by inflammation primarily seated in the kidneys or bladder; and may itself be the cause of inflammation of those organs. It is affirmed by M. Most to have been induced by metastasis of gout.

**Treatment.**—The treatment of prostatitis is similar to that required for cystitis;—general and local bloodletting; fomentations applied to the perineum, and thrown into the rectum; with full doses of opiates to allay irritation. The patient should not attempt to discharge his urine without the catheter, when suppuration has taken place, and care must be taken not to entangle the point in any small abscesses, and not to force the instrument between the bladder and the rectum. A large catheter is, for these reasons, preferable to a smaller. Sir Benjamin Brodie, in some instances, caused a gum catheter to be constantly retained, until the abscess healed; but, he found, that not unfrequently the neck of the bladder was irritated, and he prefers the occasional introduction of the catheter. In some instances, even this excites irritation, and the catheter has to be omitted altogether: the general health must, at the same time, be attended to, and if the patient is of a strumous or weak constitution, a tonic medication must be recommended.

In advanced life, the prostate is liable to become *chronically* enlarged. The affection generally commences obscurely, and the gland attains some size before the disease is detected. The symptoms are a sense of weight low down in the pelvis, with difficulty in voiding the urine, and, at times, entire obstruction. When the finger is passed into the rectum, the enlargement can be distinctly felt. If the disease be neglected, or continue notwithstanding properly directed efforts, the



bladder becomes implicated; and various secondary renal affections may ensue.

In these cases, it is often necessary to introduce the catheter twice a day or oftener, with the view of drawing off the urine. More frequently, however, there is a constant stillicidium, which is even more distressing. When the enlargement of the prostate occurs in old age, internal medicine has but little effect upon it. Usually, the patient is put upon a gentle mercurial associated with the extract of conium as a narcotic.

R.—Hydrargyri chlorid. mit. gr. x.  
Ext. conii ℥ss.—M. et divide in pil. xij.  
Dose, one, night and morning.

The bowels should be kept open by the gentlest laxatives, as castor oil, or by warm emollient enemata. Leeches may be required from time to time, should there be evidences of inflammatory irritation.

#### IV. SPERMATORRHŒA.

SYNON. Paroniria salax, Gonorrhœa oneirogonos, G. dormientium, Exoneirosis, Spermatozemia; *Fr.* Spermatorrhée, Pollutions, Pertes séminales, P. involontaires de semence, Incontinence de sperme; *Ger.* Saamenfluss.

The term spermatorrhœa was, at one time, used by many for an involuntary discharge of sperm without erection; but it has been employed, likewise, in a more extended signification,—to include too great a flow of sperm, whether produced by masturbation, or occurring during the night whilst the individual is asleep. These cases are extremely common; the author is frequently consulted by persons suffering under the effects—as they conceive—of inordinate discharge of sperm, either from vicious habits, or in dreaming. That excessive secretion may act injuriously upon the nervous system, there can be little doubt; but the injurious physical consequences, that have been ascribed to it, have often been fabulous. Speaking of it in a medical point of view, there can be no greater evil to the economy from a flow of semen accompanied by venereal desire, without sexual intercourse, than with it: but where vicious habits have been contracted, alarm is often excited by the perusal of cases of serious disease, ascribed to similar practices; and the individual becomes nervous and apprehensive, until ultimately his life may be rendered miserable to him. He observes, in the advertisements of the empiric, the numerous mental and bodily evils that may be his lot; and it has happened, that he has not had courage enough to support his fancied afflictions, and has been led to commit suicide. This has more especially occurred if the person has been engaged in marriage, and has been impressed with the idea, that impotence must necessarily result.

It is proper to state, that of the many cases in which the author has been consulted by young men thus circumstanced, and who have married subsequently, in no instance has he heard of any impediment to procreation existing; and, consequently, unless the spermatorrhœa occurs in the daytime, and without venereal desire; or, unless, along with such desire, it takes place immediately on the erection of the

male organ, he has advised the fulfilment of the patient's matrimonial intentions, and has never heard a complaint afterwards.

Spermatorrhœa, in the form of *nocturnal pollution*, is common; and unless it occurs more than once in the course of the night, and every night, it ought scarcely to be esteemed a pathological condition. The presence of sperm in the seminal ducts or vesicles produces an excitement during sleep, which is appreciated by the brain, and salacious dreams are the consequence, during which the seminal emission occurs.

These forms of spermatorrhœa cannot be mistaken. The patient either induces them by his own acts, or has full evidence of them from his sensations during sleep, and the appearances on awaking. Another form, however, is not so clear. In this, there is a discharge of a glairy, viscid fluid, whilst the last drops of urine are discharged, or on straining during the evacuation of the bowels. But the presence of such a fluid in those circumstances by no means shows that it is sperm. Indeed, it probably rarely is so, and is nothing more than the mucous fluid from the prostate or the glands of Cowper. It has been proposed to employ the microscope in our doubt; and affirmed, that if proper animalcules be found in the fluid, we may pronounce the secretion to be seminal; but this would not be decisive, inasmuch as those animalcules have been found in the mucous secretions of the urethra, and even in the urine. Moreover, M. Lallemand believes, that the seminal animalcules are deficient in these very cases, which ought certainly to be unfavourable to the idea, that the fluid proceeds from the spermatic vessels. In most of the instances, that have fallen under the care of the author, he has been satisfied, that the glairy fluid was mucous and not seminal.

The general effects ascribed to spermatorrhœa are various: the functions of the alimentary canal are said to become gradually impaired, and to be irregularly accomplished; but the animal functions suffer chiefly; the mind especially feels the effects; and the individual becomes hypochondriacal, misanthropic, and may even fall into a state of dementia.

In another part of this volume, the author has inquired into the effect of spermatorrhœa in the causation of insanity, and has given ample reason to believe, that it has been exaggerated. M. Lallemand has had an opportunity of examining the bodies of patients, who had died, he conceived, of exhaustion caused by involuntary discharges of sperm, or had perished from some accidental affection during the continuance of such discharges. He found the orifices of the ejaculatory ducts dilated, the seminal vessels hardened, and contracted, and the prostate generally diseased. In several subjects, the gland was filled with a multitude of small abscesses, and its whole tissue was pale and soft. The urethra was rarely free from disease; it was thickened, and a firm and extensive stricture was found in several patients; the bladder and kidneys, too, participated in the morbid condition.

**Causes.**—These are—gonorrhœa, which is very liable to leave behind it the lesions mentioned above; excessive sexual indulgence, or masturbation; affections of the rectum, that oppose a mechanical obstacle to the passage of the fœces, and occasion pressure on the

vesiculæ seminales, and the prostate; and a fissure of the rectum, or hemorrhoids, by occasioning violent straining, may produce the same effect. Ascarides in the rectum would seem to have caused so much irritation as to react upon the urethra and vesiculæ seminales, and to give rise to profuse involuntary discharges of sperm. A case is given by M. Lallemand, of obstinate spermatorrhœa occurring chiefly during sleep, which resisted all methods of treatment until the ascarides were removed by large and repeated enemata of very cold water. It is not improbable, however, that the impression made indirectly by the cold on the parts implicated may have been salutary.

**Treatment.**—It need scarcely be said, that in all cases of spermatorrhœa, the treatment will have to be moral as well as physical. If the disease be kept up by vicious habits; these must be abandoned; and the mental effects resulting directly or indirectly therefrom must be modified by a change of all the influences surrounding the individual, like that advised under HYPOCHONDRIASIS; attending, at the same time, to the physical aberrations that may present themselves. Where the cause of the spermatorrhœa appears to consist in irritation of the membranous and prostatic parts of the urethra, and daily and nightly emissions take place, which greatly distress, whilst they weaken the individual morally and physically, a soft bougie, passed from time to time, will often effect a cure. In the more severe cases, in which the pressure made by a common bougie, gradually augmented in size, does not succeed, Mr. Guthrie uses the argenti nitras, in the form of ointment, in the following manner,—applying it to every part of the membranous and prostatic portions that may be in an irritable condition. For this purpose, he has a hollow elastic bougie, made round at the point, and of the same size throughout. Within an inch of the end, a round or oval hole should be made as in a catheter, and the part beyond the hole and up to the point must be filled up. Into the hole a quantity of ointment of nitrate of silver, made of ten grains of the finely powdered nitrate, rubbed carefully up with one drachm of spermaceti ointment and fifteen minims of the liquor plumbi subacetatis, is to be introduced; and when the hole in the hollow bougie is opposite the irritable part, the stylet, made of whalebone, is to be pushed home, having been previously so within an inch, when the ointment is forced out into the urethra, to the surface of which it is to be applied by turning the instrument half round, or by pushing it backwards and forwards. Mr. Guthrie has found this method very efficient, and less likely to cause severe symptoms when carefully used, although they are sometimes induced by it, than any mode of applying it in a solid state. The bladder should be emptied, to prevent the necessity of the immediate or early passage of urine over the part to which it has been applied; and should any severe irritation be occasioned by it, Mr. Guthrie advises the hot bath, opiate enemata, and leeches, if necessary; and that the application should not be repeated, under any circumstances, until all the symptoms caused by it have passed away.

M. Brachet, of Lyons, has reported four cases treated by compressing the prostate gland. He states, that pressure cannot be employed

indiscriminately in every case; and that often by removing the cause we can cure the disease; but he thinks it will succeed in all cases of atony produced by venereal excesses, onanism, or blennorrhagia. The effects produced by compression are, in his opinion, of two kinds. It keeps the seminal fluid in its reservoirs, which are thus accustomed to its contact, and enabled to retain it longer; and it modifies the condition of the urethra, prostate, and seminal excretory ducts. The bandage is composed of a waist-band of leather, the extremities of which unite on the abdomen: from its centre behind a strap descends, which, on reaching the genital organs, bifurcates, and is buckled in front to the cincture. On the descending strap a small cushion is placed, opposite the part on which pressure has to be made. Dr. Batchelder, of New York, affirms, that he has been in the habit of using compression of the perinæum as a remedy in this affection for upwards of twenty years.

Of course, if the spermatorrhœa be owing to, or connected with, disease of the rectum, obstinate constipation, irritation from worms or any other appreciable cause, it will yield on the removal of these conditions; but if it be dependent upon an altered state of the urethra, ejaculatory ducts and prostate—as described above—it may not give way to any remedy except direct cauterization, either by the ointment mentioned above, which, according to Mr. Guthrie, is very efficient when properly applied, in some of the worst of the cases described by M. Lallemand, or by the solid nitrate. The last method is advised by M. Lallemand to be practised by passing solid nitrate of silver into the urethra, enclosed in an appropriate canula, and turning it very rapidly over the part to be cauterized, retaining it in contact as short a time as possible, and then rapidly withdrawing it. After the application of the caustic, the discharge of urine is excessively painful for a day or two, and is sometimes a little tinged with blood; but after the pain has ceased, the spermatorrhœa is often suspended, and the whole of the local and general symptoms gradually pass away.

The publication of M. Lallemand's work on spermatorrhœa attracted much attention; and cauterization with the solid nitrate was practised in many cases both here and elsewhere; and often where there was no necessity for so severe a remedy. Mr. Guthrie states, that, so far as his experience goes, such cases are much less common and more curable in England than they are said to be in France; and the observation of the author satisfies him that the remark is quite as applicable to this country.

For the nervousness, or great impressibility often seen in these cases, the physician is sometimes called upon to prescribe; and he is led to combine tonics with astringents. Thus, the *tinctura ferri chloridi*, (gtt. x. ter die,) and the *liquor ferri iodidi*, (gtt. xv. ter die,) are not unfrequently prescribed; and they are as likely to prove serviceable as any therapeutical agent; but the author has not derived any marked advantage from them. Where the mental distress is considerable, especially under the circumstances before mentioned,—where a matrimonial alliance is projected, and the individual is afraid he may prove impotent,—provided he is capable of erection, it may

be proper to advise, that the alliance should be entered into; and although moral impotence may exist for a short time, it will gradually wear off. As before remarked, the author has never heard any complaint subsequently, where this course has been pursued; and he has recommended it in many instances.

## SECTION II.

### DISEASES OF THE FEMALE ORGANS OF REPRODUCTION.

The organs, concerned in the diseases to be considered here, are the vagina, uterus, and ovaries; the two first lined by the same mucous membrane, and, therefore, liable to be simultaneously affected when inflammation attacks one of them. It must be recollected, too, that the urethra opens into the former, and that it also is lined by a mucous membrane, which is continuous on the one hand with that of the bladder, and on the other with that of the vagina.

The ovaries are seated in the peritoneal expansions forming the broad ligaments, and have no direct communication with the interior of the uterus.

#### I. DISEASES OF THE VAGINA.

##### a. INFLAMMATION OF THE VAGINA.

SYNON. *Inflammatiō vaginæ, Vaginitis, Colpitis, Elytritis, Elytroneus inflammatorius; Fr. Vaginite, Inflammation du Vagin; Ger. Entzündung der Scheide, Scheidenentzündung.*

Inflammation of the vagina is of common occurrence. It may be caused by mechanical injuries, or by the circumstances that give rise to inflammatory affections in other mucous membranes, and be of transient duration; or it may be more chronic in its character, and be a true blennorrhœa or catarrh of the mucous membrane; or it may be induced by the application of specific matter;—for gonorrhœa in the female is mainly seated in this membrane. Hence, inflammation of the vagina may be considered under three heads,—first, the *acute*; second, the *chronic*; and third, the *specific* form.

##### 1. *Acute Inflammation of the Vagina.*

SYNON. *Acute vaginitis.*

**Diagnosis.**—The symptoms of this affection are—great heat, pain, and dryness of the membrane, with generally more or less inflammation of the neighbouring parts,—nymphæ, clitoris, labia, &c. The membrane becomes greatly tumefied, and there is a sensation of tightness in the vagina, with pain in the back, and lower part of the abdomen, and down the thighs. As in other cases of inflammation of mucous membranes, in the course of a day or two, augmented secretion takes place, which may be watery at first, but is afterwards purulent or muco-purulent. As soon as the discharge is established, the local uneasiness is relieved; and if the constitutional symptoms have been severe, they become mitigated.

The inflammation may end by resolution or pass into the chronic form.

**Causes.**—The most common causes are those of ordinary inflammation,—mechanical injuries, as during delivery or from excessive coition; the injection of stimulating substances, &c.

**Treatment.**—Should the extent of the inflammation demand it, blood may be taken from the general system, and leeches be applied to the vulva; followed by warm fomentations, and the injection of warm water or emollient fluids into the vagina. Relief is, also, afforded by sitting over the vapour of hot water. It need hardly be said, that the horizontal posture should be maintained; and the diet be spare and easy of digestion.

## 2. *Chronic Inflammation of the Vagina.*

**SYNON.** Chronic vaginitis, *Blennorrhœa vaginæ*, *Leucorrhœa*, *Medorrhœa vaginæ*, *Ely-troblennorrhœa*, *Vaginal leucorrhœa*, *Fluor albus*, *Fluor muliebris*, *Profluvium muliebre*, *Menstrua alba*, *Menorrhagia alba*, *Colporrhœa*, *Whites*, *Sexual weakness*; *Fr.* *Fleurs ou Fleurs blanches*, *Pertes blanches*, *Écoulement blanc*; *Ger.* *Leukorrhœe*, *Weisse Fluss*, *Scheidenblennorrhœe*.

This common affection of females, from which few, if any, escape altogether, may occur at any time of life, but it is most common between the commencement and the termination of the menstrual secretion. In young children, a blennorrhœa is sometimes seen, which, where a charge of rape has been laid, might be looked upon as the result of impure connexion; but it arises, at times, from want of cleanliness in unhealthy children, combined, or not, with intestinal irritation. Occasionally, ascarides escape from the rectum, enter the vagina, and by lodging there may induce it. Professor Meigs, of Philadelphia, states, that he has seen very obstinate examples of leucorrhœa in children of two years old; and that many persons are afflicted with it at from fifty to eighty years of age.

**Diagnosis.**—The only symptom that gives occasion to inconvenience may be a discharge from the vagina, which, in mild cases, is whitish; but, at others, is of a brownish colour, and sufficiently acrid to excoriate the labia. When the discharge is very profuse, sympathetic phenomena are induced,—such as a sensation of debility especially on exertion; uneasiness in the back, and, if it continue, the irritation is apt to be reflected in various directions, so that the functions of the digestive and other organs become impaired; and hysteria, in some form, is a common complication. When it takes place from the uterus, it is said, by M. C. A. Tott, to occur more intermittently, and to be accompanied by clots of blood and mucus, or by pain in the uterus. It, moreover, augments before and after each menstrual period; and is accompanied by more constitutional suffering. A moderate discharge is compatible with vigorous health; and, according to Dr. Simpson, it has even been considered, in many instances, as an indication of the general vigour and activity of the organs of generation.

**Causes.**—It is not easy to discover these in all cases. The following have been enumerated;—rapid succession of children, masturbation, excessive coition, mechanical injuries by pessaries, ascarides, acrid

discharges from the uterus, prolapsus, polypi, and sympathetic irritations—which are necessarily obscure—from other parts of the economy.

**Treatment.**—Although the disease may be a true state of chronic inflammation of the vagina, there can be no doubt, that it is often, likewise, a mere gleet, like that which occurs from other mucous membranes. There is secretory irritation, but not inflammation. This causes, however, but little difference in the management. The physician can readily discriminate the cases that are inflammatory from those that are not, and adapt his measures accordingly. In all cases, too, it is important, that he should endeavour to discover the causes and the pathological conditions that may be connected with the disease, and remove them if practicable; hence it is advisable, in all obstinate cases, to make an examination *per vaginam*. “I have seen,” says Professor Meigs, “a supposed case of bad leucorrhœa, in which the patient, although long under medical care, had never been ‘touched’ until I was called to see her, and I immediately learned, that the entire cervix uteri had disappeared under the destructive progress of a corroding ulcer. I found, on one occasion, an old cork pessary entirely deprived of its coating of wax, which was causing a most distressing leucorrhœa, that ceased upon the removal of the foreign body. A polypus, by its presence and pressure, can hardly fail to occasion a degree of mucous irritation, which cannot be expected to cease until after the removal of the polypus. A prolapsed state of the womb is very often met with in leucorrhœa, and may be justly suspected of maintaining an unnatural irritation of the mucous textures, as well as of every other part of the genital apparatus. The removal of such a prolapsion by appropriate remedies permits the leucorrhœa to cease.”

It is not often necessary to take blood, but advantage may occasionally arise from the mixed depletory and revellent action of cupping on the loins, or of leeches applied to the interior of the thighs or the lower part of the abdomen, or from repeated blisters to the sacrum.

The general treatment must vary according to the individual case. If there be great irritation, the horizontal posture should be maintained as much as possible; and yet, in protracted cases, the benefit derived from change of air, especially from travelling air and exercise, is so great, that it has to be to a certain extent, pretermitted. Generally, the condition of the system is such as to indicate the employment of chalybeates; and, therefore, where the circumstances of the patient will admit, a visit to chalybeate springs, where, along with the use of the waters, she may have all the advantages, which a thorough mutation of all the influences surrounding her is capable of effecting, should be recommended. Where this is impracticable, one of the best preparations of iron is the iodide: (*Liq. ferri iodid. gtt. x. ter die.*) The tincture of chloride of iron, (*gtt. viij. ter die.*) may also be prescribed. The oxide of silver, in the dose of half a grain, twice a day, has been found by Sir James Eyre very serviceable.

Various therapeutical agents, to exert a local action, have been advised internally, but their powers are limited; and their main effect is

probably exerted on the general system. It is difficult to conceive how cubebs, copaiba, cantharides, turpentine, alum, uva ursi, matico, &c., can act—as supposed by some—on the utero-vaginal membrane, in any other manner; and if such be their mode of operation, they cannot be very effective. Accordingly they are but little used.

Proper attention being paid to the constitutional condition, the local affection must be treated by appropriate remedies, on which the main reliance is usually placed. When the disease is slight it may yield to cold water, thrown into the vagina several times a day, and to rigid attention to cleanliness. The agents that have been found of the greatest service, have been those of the astringent or excitant classes, as decoctions of oak bark—alone or with alum,<sup>a</sup> solutions of alum,<sup>b</sup> sulphate of zinc,<sup>c</sup> nitrate of silver,<sup>d</sup> gallic acid,<sup>e</sup> matico,<sup>f</sup> aqua chlorini—pure or diluted, creasote water, lime water, &c.

<sup>a</sup> R.—Quercus cort. ℥ss.  
Aque Oiss.  
Coque ad Oj. et cola; tum

adde,  
Alumin. ℥ss.—M.

<sup>b</sup> R.—Alumin. ℥j.—℥ij.  
Aque Oss.—M.

<sup>c</sup> R.—Zinci sulphat. ℥ij.—℥iij.  
Aque Oss.—M.

<sup>d</sup> R.—Argent. nitrat. gr. xx.—xl.  
Aque destillat. Oss.—M.

<sup>e</sup> R.—Acid. gallic. ℥j.—℥j.  
Aque Oij.—M.

<sup>f</sup> R.—Piper. angustifol. ℥j.  
Aque bullientis Oj.—Infunde.

The injections may be used twice a day, gradually increasing the strength, unless tenderness, or sense of weight in the pelvis should supervene, when they ought to be discontinued, or be greatly reduced in strength. Should there be great sensibility of the vagina and uterus—anodyne injections of starch and laudanum, or of the decoction of poppyheads, may be employed, and as soon as the supersensitiveness disappears, the astringent injections may be substituted. An experienced and accurate observer, Professor Huston, of Philadelphia, informs the author, that he has seen more advantage from injections of oil of turpentine than from any other.

R.—Ol. tereb. ℥j.  
Mucilag. acaciæ,  
Aque aa f ℥iss.—M.

At times, benefit is derived from the application of solid nitrate of silver to the vagina, as well as from a cylindrical pessary, which acts like the bougie in the blennorrhœa of the male sex, by inducing a new action in the secretory apparatus of the mucous membrane. By analogy, the bougie has been advised.

When injections are used, they may be thrown into the vagina through the ordinary female syringe; or, in married females, a cylindrical pessary, made of sponge, may be dipped in the liquid, be inserted into the vagina, and retained there, or be withdrawn according to circumstances.

In addition to injections, the cold *douche* to the loins, or the shower bath, has been found useful.

When the leucorrhœa has ceased, it will be advisable to continue the use of the injections for some time, as relaxation of the lining membrane of the vagina is apt to follow, which may lead to œdoptosis or prolapsus. To prevent a recurrence, it is also well to use the bidet once or twice a day.



### 3. *Specific Inflammation of the Vagina.*

SYNON. Gonorrhœa of the female.

Gonorrhœa in the male is a specific inflammation of the lining membrane of the urethra. In the female, it involves chiefly the vagina and vulva; and, less considerably, the urethra and uterus. It is indicated by the ordinary signs of inflammation of the vagina, but the irritation is usually greater in this variety; the discharge is yellowish or greenish, and there is great ardor urinæ, and discharge from the urethra. It must be admitted, however, that it is not easy to distinguish the inflammation arising from impure connexion, from that which originates from simple causes. One writer of distinction, Sir Charles M. Clarke, thinks it impossible. The speculum may aid us in the diagnosis. Whenever the peculiar erosions or superficial ulcers of the mucous membrane covering the cervix uteri, which were seen by M. Ricord, in 19 out of 20 cases, are found, there ought to be little hesitation, perhaps, in pronouncing the disease to be gonorrhœa, yet this diagnosis can scarcely be considered certain; and, after all, much will depend upon the moral character of the female.

An interesting question arises—as to whether leucorrhœa can communicate a similar discharge to the male? The author has met with one or two cases, in which a discharge in the husband was so attributed, and where the character of the parties was above suspicion; and similar instances have occurred to others. Mr. Langston Parker has seen severe inflammation of the glans and prepuce, with ulcerations, occur after intercourse with females labouring under leucorrhœa; but a true urethral blennorrhœa—he thinks—has never, perhaps, been so induced.

**Treatment.**—In the early stages of gonorrhœa, the treatment must be that recommended for acute inflammation of the vagina. The first object is—to reduce the activity of the inflammation. After this has been done, the treatment has to be rather local than general,—the antigonorrhœal remedies, so much used when the disease affects the male,—copaiba, cubebs, &c., being of but little efficacy. Aperients, with diluent drinks, constitute almost the whole of the internal treatment. The local treatment consists in leeching the vulva; the use of warm fomentations; emollient and anodyne injections, and the entire soothing plan. As in the case of the male, it has been presumed that gonorrhœa may be kept up by the contact of the two sides of the inflamed mucous membrane; and hence it has been advised, that a soft plug of charpie or lint should be introduced into the vagina, which may be changed twice a day, and, during the intervals, be kept moist by injections, adapted to the nature of the case, thrown over it by means of a syringe. The plug may, also, be dipped in the injection before it is introduced. The time soon arrives, however, when topical applications of another kind become advisable;—the patient still suffering from pain and a copious discharge, and the membrane being in a state of hyperæmia. Under such circumstances, it has been advised of late years, to pass solid nitrate of silver over the

parts, or to use it in the form of an injection, plugging the vagina in the intervals with a piece of soft dry lint.

R.—Argent. nitrat. gr. x.—xv.  
Aquæ destillat. f ℥j.—M.

Other injections may likewise be used—as the acetate of lead, and alum, with the view of preventing the disease from becoming chronic.

R.—Plumb. acetat: ℥ij.—℥ij.  
Aquæ Oij.—M.

R.—Alumin. ℥ij.—℥ij.  
Aquæ Oij.—M.

In the chronic forms, it is advisable to employ the speculum to examine into the condition of the affected mucous membrane. In some cases, it may exhibit nothing more than evidences of inflammation, without any material change of structure; but in others, vesicles, pustules or ulcers may be seen here and there; and, in long-protracted cases, the os uteri is said to be always more or less implicated,—the lips being turgid, red, and everted, and generally covered with small ulcerations, granulations, or other changes resulting from chronic inflammation. Where the discharge is chronic without change of structure, the solutions already advised in chronic leucorrhœa, or one of tannin,<sup>a</sup> may be prescribed.

<sup>a</sup> R.—Acid. Tannic. ℥ij.—℥j.  
Vini rubr. ℥vj.—M.

When the discharge is very offensive, solutions of chloride of lime or of chloride of soda may be substituted.

Where ulcerations or granulations exist, it may be well to touch them through the speculum with solid nitrate of silver, or to throw in an injection of the nitrate, of the strength of six grains to the ounce of water. The same injection is adapted for cases, which have extended into the uterus along its lining membrane.

## II. DISEASES OF THE UTERUS.

### a. ORGANIC DISEASES OF THE UTERUS.

#### 1. *Hyperæmia of the Uterus.*

SYNON. Congestion of the uterus; *Fr.* Congestion sanguine de l'utérus, *Metrohémic* ou *Hypermetrohémic*, (*Piorry.*)

This condition occurs frequently about the first establishment of the catamenia, and always exists to a greater or less degree at each menstrual period; for, whether the discharge be regarded as a secretion from the uterine vessels or as a periodical hemorrhage, a greater flow of blood will necessarily take place to the uterus, and occasion hyperæmia of the capillary vessels. Hyperæmia likewise appears about the period of the cessation of the menses, and before they are finally arrested,—the female often experiencing uneasy sensations and signs of fulness in the uterine region, and not unfrequently copious hemorrhage.

It need scarcely be said, that the hyperæmia, which precedes or accompanies each menstrual period, is a physiological or healthy state, and that it only becomes pathological, when it passes beyond

the proper bounds, or occurs at periods when it is not demanded by the healthy function.

**Diagnosis.**—The usual symptoms are—a feeling of fulness, tenseness or heaviness in the pelvis, which may be referred to various parts of the bony parietes. The pain, which is seated deep in the pelvis, appears in paroxysms, and is, at times, very severe, so as to have received the name *uterine colic, cramp, or tenesmus*. The pain is not augmented on pressure, and the affection is rarely accompanied by constitutional disturbance. At times, however, the stomach sympathizes, and, occasionally, there is tenderness of the mammæ when they are pressed upon. Often, too, hysterical symptoms exist.

Where the hyperæmia has persisted for some time, the uterus, when an examination is made *per vaginam*, is generally found to be enlarged, and low down in the cavity of the pelvis; the os uteri is patulous, and its lips are tumid and spongy, but they are little, if at all, tender upon pressure; nor is there the increased heat of the parts observed in cases of inflammation. The use of the speculum shows a discoloured and purplish state of the surface of the cervix and os uteri, and especially of the lining membrane of the latter, with, occasionally, an exudation of blood upon it.

**Causes.**—Organic diseases of the uterus, as polypus, may predispose to this affection, especially at the menstrual periods. Whatever excites the uterus, directly or indirectly, may induce the same effect: hence, too great indulgence in venery, or any direct excitement of the organs of reproduction; great fatigue in the erect posture; substances that powerfully excite the urinary organs, as savine, turpentine, &c., are exciting causes.

Where a female has aborted more than once about the same period, the predisposition to the recurrence of hyperæmia in subsequent pregnancies is often so great as to resist every effort on the part of the practitioner.

**Treatment.**—Where the condition of the patient will bear it, blood may be taken either from the arm, or, in the way of revulsion, by cupping or leeches, from the region of the loins. A recent writer, Dr. Simpson, affirms, that he has known good effects from the application of a few leeches to the cervix uteri immediately before, or at the commencement of the menstrual period, when the hyperæmia has been urgent; but this course is disagreeable to the patient, and can rarely be necessary. In such cases, the menstrual flux itself relieves the hyperæmia, and, therefore, little is needed beyond the horizontal posture, and mental and corporeal quietude, which are required, indeed, in all cases.

In debilitated habits, where blood cannot be drawn, dry cupping may be used on the lumbar region.

## 2. *Inflammation of the Uterus.*

**SYNON.** *Inflammatiō uteri, Metritis, Hysteritis, Empresma hysteritis; Fr. Inflammation de la matrice, Métrite; Ger. Gebärmutterentzündung, Entzündung der Gebärmutter.*

Inflammation of the uterus may occur both in the unimpregnated and in the impregnated state; but the acute form is less common in

the former, whilst the more chronic varieties are frequently met with. It may be seated in the serous or in the mucous coat, or may affect both of these simultaneously with the substance of the viscus. It is this last condition, which we shall describe first, and afterwards allude to the inflammation of the lining membrane that gives occasion to uterine leucorrhœa.

a. *Inflammation of the Substance of the Uterus.*

**Diagnosis.**—Acute metritis is characterized by the following symptoms. Preceded by, or along with, the ordinary constitutional symptoms of internal inflammation, pain is felt deep in the pelvic region, with occasional attacks of acute pain in the back, shooting through the symphysis pubis, and down to the groins and thighs; the pain is not augmented on gentle pressure, but is greatly so, if much pressure be exerted downwards from above the brim of the pelvis, as well as during coughing or sneezing. There is often, also, a sensation of bearing down, with difficulty in micturition, and if an examination be made *per vaginam*, the cervix uteri may be found swelled, and very tender on pressure; and after the disease has continued for some time, there may be more or less abdominal swelling. These symptoms succeed, at times, to obstruction of the catamenia, so as to leave no doubt as to the nature of the affection. The constitutional symptoms vary greatly. At times, the fever is high; but this is not common; nor is the disease very frequently fatal. It may, however, assume the chronic form and give rise to very serious organic mischief.

The urine possesses all the characters of the inflammatory type. M. Becquerel found it acid, of a reddish colour, of an average specific gravity—1.018 to 1.021—and at times containing albumen. A sediment of uric acid was always thrown down, either spontaneously, or by the addition of nitric acid: during convalescence it became paler and less dense, and ceased to deposit sediments.

**Causes.**—The same causes that induce hyperæmia of the uterus, may equally occasion acute metritis. It may be caused, also, by the ordinary influences that excite phlegmasia of internal organs.

**Pathological Characters.**—The tissue of the uterus may be swollen, of a blackish red colour, softened, friable, and engorged with blood mixed with a sero-purulent fluid; and, occasionally, small abscesses, filled with pus, are met with here and there, or even larger accumulations. The uterine veins may be filled with pus, as well as the vessels proceeding from them. Occasionally, the tissue of the uterus is found to be so much softened, as to tear readily when the finger is pressed upon it; and, still more rarely, there are evidences of a gangrenous condition.

**Treatment.**—This is essentially the same as that required in other internal inflammations,—bloodletting, general and local; cups to the loins, and leeches to the vulva. The tartrate of antimony and potassa may, likewise, be given so as to produce a nauseant effect; warm fomentations may be employed; and if the disease do not yield, counterirritants may be applied—as sinapisms or frictions with croton

oil—which are better perhaps, as has been suggested by Dr. Simpson, than cantharides, owing to the latter irritating the bladder at times, and sympathetically increasing the uterine inflammation. Irritating cathartics ought not to be employed for a similar reason; but the bowels may be kept free by gentle laxatives, as castor oil, or by emollient injections, which act beneficially also as fomentations on the inflamed uterus.

*Chronic inflammation of the uterus* may be the sequel of the acute; or it may be chronic in its characters from the commencement. The symptoms often come on very insidiously; and are similar to those of the acute form but less in degree. There is, generally, more or less disturbance of the digestive functions, so as to distract the attention of the practitioner from the real seat of the mischief, and to lead to the idea, that the primary seat of deranged action is there. There is no form of disease in which reflected action is more seen than in chronic metritis and its consequences: although the irritation may be primarily seated in the uterus, the manifestations may be more strikingly exhibited in other and distant parts of the economy.

**Treatment.**—This does not vary from that appropriate to chronic inflammation of other internal organs. The main reliance has to be placed on counterirritation, emollient or anodyne fomentations thrown into the vagina or rectum, with the internal use of mercury—as of calomel combined with opium—given so as to gently exert its revellent action upon the mouth.

All the exciting causes should of course be avoided; and if the patient be married, it will be advisable, that she should sleep apart from her husband. Should *hypertrophy of the uterus* result, the preparations of iodine will be found of the greatest service.

#### b. *Inflammation of the Lining Membrane of the Uterus.*

SYNON. Endometritis.

It has been already seen, that inflammation may affect the lining membrane at the same time with the substance of the uterus; but, not unfrequently the phlegmasia is restricted to the lining membrane, where it assumes different characters,—at times being *ulcerative* and following acute metritis in the puerperal state,—or succeeding to chronic metritis, when it is generally restricted to the region of the cervix, and, according to Professor Simpson, of Edinburgh, is seated, most commonly, on the vaginal surface of the posterior lip. The ulcerations are usually very superficial, and cannot, consequently, be detected without the aid of the speculum.

Another form of inflammation is the *membranous*, in which coagulable lymph is thrown out, which takes the shape of the cavity, as a similar plastic effusion does in cases of croup. It may, however, be thrown off in the form of shreds along with the catamenia, so as to give rise to a very painful form of dysmenorrhœa. Occasionally, too, as the result of chronic inflammation, the mucous follicles of the cervix and os uteri become permanently enlarged; and distinct red granula-

tions are, at times, thrown out, like those of granular inflammation of the conjunctiva.

*Chronic metritis* gives occasion to one form of leucorrhœa,—*Uterine leucorrhœa*, *Fluor albus uteri*, *Medorrhœa uteri*, *Metroblennorrhœa*, *Whites*, *Suppurative inflammation of the uterus*; Fr. *Leucorrhée utérine*, *Catarrhe utérine*; Ger. *Weisse Fluss der Gebärmutter*, *Gebärmutterblennorrhœe*. That which takes place from the vagina has been already described; and it has been shown, by dissection, that a similar discharge may take place from the lining membrane of the uterus, either alone or along with the vaginal leucorrhœa. The source of the discharge, in these cases, is indicated by its increase immediately before or after\* a monthly period, by pain in the uterus, and by the discharge assuming, at those times, a more purulent appearance,—facts which are said not to hold good with regard to vaginal leucorrhœa.

Chronic suppurative inflammation of the uterus may be either an idiopathic affection, or may be excited and kept up by the presence of tumours, polypi, &c., in the walls or cavity of the uterus itself; and when the os uteri is obliterated by inflammation or other causes, the pus may accumulate within, and distend, the uterine cavity.

**Treatment.**—This variety of leucorrhœa is by no means as much benefited by astringent injections as the vaginal; it would appear, indeed, that at times, they cause great irritation and an aggravation of the local distress, and, occasionally, abdominal disease, from passing, it has been supposed, along the Fallopian tubes into the peritoneal sack. Of late, however, such direct applications have been urged on good authority. If the disease be restricted to the cervix uteri, Dr. Evory Kennedy, of Dublin, treats it by the nitrate of silver or the fluid nitrate of mercury applied to the part; and if—as is sometimes the case—there is a contraction of the cervix, either original or consequent on the first cauterizations, this must be overcome by graduated bougies. The application to the lining membrane of the uterus is best made by passing the brush that holds the caustic solution through a catheter. Dr. Kennedy thinks he is able to obviate any ill effects of uterine injections by the following contrivance. By means of a long graduated glass syringe, a quantity of fluid, not exceeding twenty minims, may be thrown into the cavity of the uterus, and its escape be thus secured. The syringe, attached accurately to a small male gum-elastic catheter, is fitted into a somewhat shorter catheter or tube, open and well-finished at its extremity,—the difference in the calibre of the catheters being such, that the larger catheter admits of the regurgitation of the fluid between it and the smaller. The syringe and inner catheter are first charged with fluid to the point; leaving the piston so far withdrawn, as to allow nearly twenty minims or half a drachm, in addition to the charging of the tube, within the cylinder of the syringe, as proved by the graduated mark on its side. The patient is now placed in the recumbent posture, the tube introduced, the inner catheter, graduated also so as to indicate when it projects beyond the other, is passed through, and the fluid slowly projected into the cavity of the uterus. In this way, he thinks, safety is insured. The acute form requires

cupping on the loins, with the hip bath, and warm emollient injections into the vagina and rectum; and after the active stage has passed away—or, at any time during the chronic form, counterirritants may be applied to the sacrum—as the ointment of tartrate of antimony and potassa, croton oil, or dry cups. If a blister be applied, it ought not to be kept on too long, and its surface should be covered with tissue paper, to prevent, if possible, the absorption of the flies, or their active principle. Internal remedies are generally of but little use, with the exception of such as are directed to the accompanying condition of the constitution,—chalybeates, for example. It may be proper to remark, however, that, of late, ergot is said to have succeeded, where other remedies had failed. It may be given in the dose of five grains three or four times a day. The following powders have been recommended by Dr. Ryan.

R.—Ergotæ ℥ij.  
 Cubeb. pulv. ℥j.  
 Pulv. cinnam. c. ℥ss.  
 Sacchar. purif. ℥j.—M. et divide in chart. viij.  
 Dose, one, three or four times a day.

In the latter stages of the disease, gentle astringent injections, similar to those advised under VAGINAL LEUCORRŒA, may be thrown into the vagina; and the lower part of the abdomen and back may be sponged with tepid water: attention to cleanliness is, of course, essential.

After acute and chronic inflammation of the uterus, a GRANULAR INFLAMMATION OF THE MUCOUS MEMBRANE OF THE CERVIX UTERI may exist, and be discoverable by the speculum. When it is the result of acute inflammation, the granules are occasionally few in number, and about the size of peas, firm and of a whitish colour, but more frequently, of the size of millet seed; whitish, but soft as if vesicular, and in great numbers; and a slight touch of the membrane of the cervix uteri gives occasion to a discharge of blood. Those that are the result of chronic inflammation are either small, hard, and whitish; reddish and soft; or miliary, without redness of the mucous surface of the cervix. The chief functional phenomena are pain and discharge from the vagina. The granulations may occasionally be felt by the finger; and they are seen very distinctly with the aid of the speculum.

The *treatment* is, in the main, the same as for acute and chronic metritis. The nitrate of silver, according to Professor Huston, of Philadelphia, is by far the most effectual local application, when properly used. It may be applied in solution—from 10 to 30 grains to the ounce of water—by means of a camel's-hair pencil, through a speculum, carefully brushing with it the lining membrane of the orifice and cervix.

#### b. FUNCTIONAL DISEASES OF THE UTERUS.

The functional diseases of the uterus concern the monthly secretion, which takes place from that viscus, from the period at which the young female becomes nubile until the *critical time of life*, when the secretion is wholly arrested. The age at which it commences in this climate, varies greatly in individuals; the most common period, how-

ever, is from thirteen to fifteen years, and the usual time of its cessation, in the temperate zone, is between forty and fifty years. Many exceptions, however, occur to this: in rare cases, the catamenia have appeared at a very early age, even in childhood;—and, again, they have continued, with powers of fecundity, greatly beyond the age specified. The quantity of fluid lost, too, varies greatly, and scarcely admits of appreciation. It has been estimated at from six to eight ounces in temperate climates.

The menstrual fluid is evidently an exhalation from the vessels of the uterus; but difference of sentiment has existed, as to whether the fluid be simply blood or so changed from blood as to be esteemed a secretion. The author is disposed to embrace the latter opinion, but many eminent observers adhere to the former. It is not, however, a matter of moment in a pathological or therapeutical point of view; for all admit, that, at each menstrual period, the uterus becomes the seat of hyperæmia, or of irritation, or of both, and of a loss of fluid directly or indirectly from the uterine vessels; but—as remarked by M. Adelon—it is as impracticable for us to say, why this irritation is renewed monthly, as it is to explain why the predominance of one organ succeeds that of another in the progress of life. The function is as natural, as instinctive to the female, as the development of the whole sexual system at the period of puberty.

As a general rule, the appearance of the menses denotes the capability of being impregnated, and their cessation the loss of such capability. Yet it would appear, that females have become mothers without ever having menstruated, although this has been denied. Whilst menstruation continues, the system is unusually irritable; and hence hysteria is very common in impressible females, and especially in such as have had previous attacks. It has, already, too, been remarked, that all organic affections of the uterus are apt to be augmented during the hyperæmia which precedes their establishment. (See the author's *Human Physiology*, 6th edit. ii. 387, Philada. 1846.)

#### I. DISORDERS OF MENSTRUATION.

SYNON. Paramenia, Mismenstruation, Menstruatio anomala, Menses anomalæ;  
*Ger.* Krankhafte monatliche Reinigung.

The disorders of menstruation may be divided into—1. Cases in which the function has never been established; or, after having been so, is suppressed, constituting *Amenorrhæa*. 2. Those in which the function is executed with pain and difficulty—*Dysmenorrhæa*. 3. Those in which it takes place from other parts than the uterus—*Vicarious menstruation*; and 4. Those in which the flow is excessive—*Menorrhagia*. Each of these will require a distinct consideration.

##### 1. *Suspended Menstruation.*

SYNON. Amenorrhæa, Paramenia obstructionis; *Fr.* Amenorrhée, Suppression de flux menstruel; *Ger.* Amenorrhœe.

Two forms of amenorrhæa may be pointed out,—one in which the catamenia have never appeared; and another, in which, after having appeared, they become obstructed.



a. *Retention of the Menses.*

SYNON. *Emansio mensium*, *Amenorrhœa emansionis*; *Paramenia obstructionis emansio*, *Menstruatio retenta*, *Menoschesis*, *Absent Menstruation*; *Ger.* *Verhaltung der Menstruation*.

Although—as already remarked—the menstrual secretion generally commences from the thirteenth to the fifteenth year; yet it is sometimes retarded much beyond the ordinary period.

**Causes.**—The menses may be retained from various causes. The author has elsewhere shown, that the view is more and more entertained, that menstruation is dependent upon changes occurring periodically in the ovary, and that where females, who have died during menstruation, have been examined, evidences have been found of the rupture of an ovarian vesicle, whence it has been inferred, that, during the whole of the period of life, when the capability for conception continues, there is a constantly successive development of ovarian vesicles and their contained ovules,—that, at each epoch of menstruation, a vesicle, having reached the surface of the ovary, becomes the seat of a peculiar organic action, in which all the organs of generation participate, and that the result of this action is the rupture of the vesicle, and the loss of the infecund ovum, either by expulsion from the uterus or by destruction in the ovary. (*Human Physiology*, edit. cit., ii. 381.) It can hence be understood, that if the ovaries be wanting, amenorrhœa may be a necessary consequence; and that where they have been removed, or are extensively diseased, the function, although previously existent, may be arrested. In a celebrated case of the removal of both ovaries by Mr. Pott, menstruation entirely disappeared, although, previous to the removal, puberty existed, and the catamenial function had been well executed. Where the ovaries are wanting from birth, the organic actions generally may be well performed; the only function which is necessarily absent being that of reproduction. In such case, no development takes place at puberty, as in the well-formed female; but she acquires characters that approximate her, in some respects, to the male; the mammæ are generally not developed; the voice is more raucous than that of the female, and beard appears upon the upper lip. A similar approximation, according to M. Mehlis, is observed in the elderly female, after the ovarian functions have ceased for some time. Absence of the uterus, or defective formation, may equally interfere with the menstrual function; and the same result may follow from closure of the canal leading into the uterus, at the os or cervix uteri, or from natural or accidental atresia or imperforation of the vagina. A firm hymen has so completely closed the vagina, that, although the function may have been executed in the uterus,—owing to the fluid not being able to escape, there have been no outward signs of menstruation; and it has happened, according to Dr. Churchill, that the fluid has accumulated so as to distend the uterus to bursting. The author has known several cases, in which entire relief has been afforded by the division of the membranous impediment to the exit of the catamenia.

Congenital absence of the uterus does not interfere with the health, because it is a part of the formation proper to the individual; where, however, the organs are there, and the secretion takes place but can-

not escape, the health is always more or less impaired; and, at particular periods, the patient is liable to pain in the back; sense of fulness in the uterine and vaginal regions; bearing-down efforts, with tumefaction, and often great tenderness of the abdomen, especially of the hypogastric region. If these signs exist, the ovaries and uterus are probably both present; but should there be any doubt, a careful examination must be made. Many cases of absence of the uterus are recorded, and several have been collected by Dr. Chew of Baltimore. Where there is no congenital defect, but the menstrual function is not established at the usual period, and the other developments, that should occur at puberty, are not apparent, the general health being good, the case may be merely one of *tardy puberty*, and may merit no attention. Dr. Camps has recently recorded the case of a female, who had attained the age of 45, without ever having menstruated, or having been in the slightest degree incommoded by the absence of the catamenia. She was in every respect naturally formed, and her appearance perfectly feminine. But where the usual changes have occurred, and the catamenia are alone defective; and especially if ineffectual efforts be made monthly, as indicated by the ordinary signs of hyperæmia of the uterus, with impaired health, the case may require the attention of the physician. This state may be either accompanied by signs of the polyæmic or anæmic condition—more frequently perhaps the latter; the health suffers; nervous and hysteric phenomena exhibit themselves; the digestive function is imperfectly and capriciously executed; the circulation is always more or less affected, and all the anomalous symptoms may present themselves, which are referred to under *CHLOROTIC CACHEXIA*. It is all-important to bear in mind the existence of these two opposite conditions in amenorrhœa, inasmuch as it may prevent the indiscriminate reliance on reputed emmenagogues, which so strongly characterize the practice of the uninformed, and by which much mischief is occasioned.

#### b. *Suppression of the Menses.*

*SYNON.* Suppressio mensium, Paramenia obstructionis suppressio, Amenorrhœa suppressionis, Menstruatio suppressa, Menostasis, Suppressed menstruation; *Ger.* Unterdrückung der Menstruation.

Under this head are considered cases in which menstruation, after having been once established, is arrested suddenly or gradually. In regard to the fact of such suppression, we have to be guided by the testimony of the patient; and, as respects chronic suppression, we may be deceived by her. She may complain, for example, of suppression having occurred two or three months previously, and may have recourse to medical aid, when she knows that she has exposed herself to causes which may have given rise to it, but which it is important for her to conceal. One of the earliest signs of pregnancy—it is well known—is the suppression of the menstrual function; and, during the first months of utero-gestation, it is a matter of great difficulty to distinguish between suppression from natural causes, and that which is induced by morbid agencies. Generally, in the former, there is morning sickness; and, in the course of time, a development of the areola and of the sebaceous follicles about the nipples, with the appearance of

kiesteine in the urine. In the course of three or four months, too, the general health is re-established, whilst in true *amenorrhœa suppressionis*, the health commonly continues impaired. The difficulty of diagnosis can only exist, however, prior to the period of quickening; for, at this time, and afterwards, other signs of pregnancy exist, which have been detailed elsewhere, and which leave little or no doubt as to the nature of the case. (*Human Physiology*, 6th edit. ii. 459, Philad. 1846.) When the function is suddenly suppressed, as by irregular exposure to cold during the existence of menstruation, or some powerful mental emotion, or bodily disease, signs of febrile irritation may develop themselves sooner or later, accompanied by local inflammation in one or other of the viscera of the three great splanchnic cavities. At other times, the uterus becomes the seat of severe pains, which appear to be of the neuralgic kind. Perhaps, indeed, the most common effect is one of an entirely neuropathic character; and, not unfrequently, the form it assumes is temporary insanity or a severe variety of hysteria.

To acute suppression of the menses, we can refer cases of insanity with more probability than to the chronic form, which may supervene gradually without materially interfering with any of the functions. Indeed, not unfrequently, chronic suppression of the menses is connected with the bodily condition, which is itself the cause or the accompaniment of the insanity, and both occasionally disappear as that condition is modified.

**Treatment of Amenorrhœa.**—When menstruation is obstructed by any malformation, this must be obviated where practicable. If it be caused by an occlusion of the vulvo-uterine canal, the aid of the surgeon becomes necessary. At times, as already remarked, a membrane covers the os uteri, or the canal of the cervix is imperforate. In the latter case, it has been proposed, by Dr. Churchill, to make an artificial canal by means of a trocar, or an instrument resembling that used by Stafford for dividing strictures of the urethra; but it need hardly be said, that such an operation should be decided upon and executed with exceeding caution. Where a membrane over the os uteri is the obstacle, it may be punctured or ruptured, and a probe or small bougie be passed into the uterus, as described under Painful Menstruation. This has been done, and with great success. Such a condition may be a positive impediment to conception, and hence its removal may have the additional effect of removing this impediment.

In all cases of amenorrhœa, the pathological cause of the obstruction must be carefully inquired into, and, if practicable, removed. Where retention of the menses is connected with a plethoric condition of the system, or suppression of the menses is of the acute character described above, antiphlogistics are demanded, with the horizontal posture, and all the remedies that are required in internal inflammation. In the severest forms, where death has occurred in a few days, inspection, according to Dr. Ferguson, would seem to have shown, that it has been caused by phlebitis. In such cases, the only hope of safety is in the active employment of a sedative treatment. The mass of cases are, however, of the chronic form; and although these may be accompanied by asthenic phenomena in some cases, and by sthenic

phenomena in others, the number of cases of the former largely predominates, and hence it is, that chalybeates are generally ranked amongst the most important emmenagogues.

The author has elsewhere remarked, that much harm has arisen from a belief in the existence of direct emmenagogues, as it has led to the use of special agents, without discriminating the causes that may have given rise to the amenorrhœa. In all cases, such causes must be appreciated, and the treatment be directed to their removal, as well as to that of the morbid condition of the uterus produced by them. (*General Therapeutics and Materia Medica*, 3d edit. i., 406, Philad. 1846.)

Where the suppression is connected with polyæmia, and there are symptoms of the *molimen menstruale* present, as indicated by the evidences already described of polyæmia of the uterus, it may be necessary to take away blood from the arm or foot; or by cupping over the lumbar or sacral region, or by the application of leeches to the vulva or thighs, knees or feet; and in the intervals between the menstrual efforts, the diet should be restricted, and consist of aliments not too nutritious. Exercise should, likewise, be taken short of inducing fatigue, and a cathartic be prescribed occasionally. On the recurrence of the next menstrual period, the hip-bath, and warm, simple or sinapised pediluvia, frictions to the loins with stimulating liniments, and an aloetic cathartic or enema, which acts on the uterus by contiguous sympathy, may be used; and the course will, occasionally, be successful. When, on the other hand, the suppression is associated with a want of tone in the system generally, an opposite course of treatment becomes advisable. A brisk cathartic may here, also, be necessary at first, and even afterwards,—but it should be followed up by the use of tonics and of every mode of improving the general health. The great rules for this purpose, and the modes for carrying them into effect, are laid down under ANÆMIA, and CHLOROTIC CACHEXIA. Of the therapeutical agents, chalybeates have been most employed, and of these the protocarbonate and the precipitated carbonate of iron have been extolled of late years. The constitution should be invigorated by proper attention to diet; exercise; bathing, especially the shower-bath; change of air, particularly to the seaside, and the employment of sea-bathing, where this is practicable.

In addition to these general agencies, on which alone much dependence can be placed, many reputed emmenagogues have been administered, but they cannot be relied upon. Those, of whose power of acting on the uterus there is the least doubt, in the opinion of Dr. Churchill, are iodine, ergot, and strychnia; yet it may be questioned, whether these or any agents have an effect, which adapts them for all cases, and merits for them the title of *emmenagogue*. Iodine, which has been highly extolled by Messrs. Coindet, Brera, Formey, Ashwell, Aldridge, and others, may be given in the form of the *tinctura iodini composita*, of the London Pharmacopœia, (gtt. x.—xxx. three times a day.) Ergot may be prescribed in powder (gr. v.—x. two or three times a day); and strychnia in the form of tincture.

R.—Strychniæ gr. iij.

" Alcohol. f ʒj.—M.

Dose, 6 to 24 drops, twice or thrice a day.

Of twelve cases of suppressed menstruation, treated with strychnia by Dr. Bardsley, ten were cured, and two relieved; and Dr. Churchill had two cases, in which the cure by it was complete and permanent. An intelligent writer, Dr. Ferguson, classes these, and other agents that have been employed, under the title of *nostrums*. "There are numberless nostrums," he remarks, "of greater or less value, which, from their very number, prove how capricious a disease is amenorrhœa, and how curable. Dale excites the mammæ by repeated application of one or two leeches; the organ enlarges greatly, and the uterus sympathizes on being thus aroused. Very many authors give five to eight grains of ergot. Carron du Villard recommends cyanuret of gold in minute doses; Bradley gives strychnia; Brera, iodine; Amussat applies an exhausted glass to the uterus; and Rostan, leeches."

Of excitants, directed more immediately to the uterus, may be enumerated,—electricity or galvanism or electro-magnetism or magneto-electricity transmitted across the region of the uterus, which is probably one of the best. More benefit, according to Dr. Robt. L. McDonnell, of Montreal, is derived from an uninterrupted and steady transmission of a moderate current than from occasional shocks of great intensity. He employs the apparatus sold under the name of the *vibrating magnetic machine*. One of the buttons at the free extremities of the electrodes may be kept firmly pressed upon the pubes, the physician commencing by passing the other button along the spine, from the occiput to the os coccygis. After this has been done slowly four or five times, the button is kept for five or six minutes immediately over the sacrum, and the electricity is thus passed in an uninterrupted current through the uterus. The current may also be sent transversely through the pelvis, by placing a button on each hip, above the great trochanter. Irritating the uterus itself by the introduction of bougies, and stimulating injections into that viscus,—as for example, of a few drops of liquor ammoniæ to an ounce or two of milk,—has also been advised. This has been properly stigmatized, however, by Dr. Churchill, as a hazardous measure, and one which may induce metritis. The injection, thrown only into the vagina, has been spoken of favourably by Dr. Blundell.

On the whole, then, it is evident, that the cause of suppressed menstruation must always be minutely investigated, before the physician attempts to prescribe. Without obtaining such a knowledge of the state of the organ, and ascertaining how far the suspension or irregularity is due to the condition of the organ itself, or to that of the general system, our practice must ever be uncertain. As remarked by Dr. A. T. Thomson, in floundering about and trying various remedies, without rule or discrimination, we may, it is true, stumble by accident on something effectual; but much evil may be previously produced.

## 2. Painful Menstruation.

SYNON. Dysmenorrhœa, Paramenia difficilis, Amenorrhœa difficilis, Menorrhagia difficilis, Dysmenia, Menstruatio difficilis, M. dolorifica, Laborious menstruation; *Fr.* Dysmenorrhée, Menstruation difficile, Règles difficiles, Strangurie menstruelle; *Ger.* Erschwerter Monatsfluss.

Dysmenorrhœa differs from amenorrhœa in menstruation being accomplished, but with great pain, which may commence a day or

two before, or not until immediately preceding the flow. The pain is generally intermittent, and it differs in degree, from constant soreness to agonizing dartings or colics. Along with the uterine pain, there is, commonly, more or less constitutional disturbance,—at times, febrile excitement; but, at others, merely disorder of the digestive function—as indicated by vomiting and diarrhœa with tenesmus. Occasionally, too, there is scalding pain on passing the urine. Frequently, the system is extremely impressible, so that hysteric and hysteroid affections are concomitants. As soon as the catamenia flow, these symptoms generally become mitigated, and gradually pass off.

Dysmenorrhœa may occur with different conditions of the menstrual discharge. Sometimes, it is as copious as usual: at others, to a greater extent; but, more frequently, it is diminished in quantity; and it is not uncommonly mixed with shreds apparently of coagulable lymph; and at times a coat, similar to the decidua uteri, which has the shape of the cavity, is met with. These last cases are usually combined with symptoms denoting inflammatory excitement; and, have given occasion to a variety of dysmenorrhœa, termed *inflammatory*, to distinguish it from the *neuralgic*, as well as from that which arises from mechanical impediment to the flow, and hence termed *mechanical*. By Professor Simpson, of Edinburgh, and Dr. Oldham, of Guy's Hospital, London, it has been recently maintained, that the membrane, thrown off in the cases above-mentioned, is really a decidua formed in consequence of ovarian excitement. "The morbid action," says the latter observer, "does not begin at the uterus, but in the ovary, and the sequence of effects is, first, ovarian congestion, calling forth a sympathetic growth of the uterine glands, forming a false decidua, and uterine engorgement." Dr. Oldham affirms, that if good specimens be carefully examined, they will be found to possess the same structure as the decidua, and to have, like it, a rough and attached, and a smooth free surface; but what he considers to be more significant of their identity, they are full of small holes and epithelium scales, which he doubts not are the openings and epithelium of the uterine glands. It is very true, as Dr. Montgomery has remarked, that the small cotyledonous sacks are wanting, but this, he says, is often the case with the true decidua thrown off in abortion.

Painful menstruation not only gives rise to great suffering monthly; but, especially when membranous, is a positive impediment, in most cases, to conception. Fortunately, the majority of cases are not of the last kind. "From an attentive examination of these cases," says Dr. Churchill, "I have been led to the conclusion, that the disease is most frequently of a simple neuralgic character. We have no evidence of any inflammatory process going on; the pulse is rather weaker, and scarcely, if at all, quicker; the skin is cool, and the remaining functions undisturbed. In short, there is no proportion (as there is in inflammation generally) between the amount of local distress and constitutional suffering. The womb appears to be in a state of great irritability."

Dr. Oldham mentions retroversion of the womb as a sequela of the membranous forms of dysmenorrhœa. The change occurs slowly,

and requires several months to be effected. The texture of the uterus becomes altered. "In a recent congestion, the posterior wall is soft, compressible, and painful to the touch, but after repeated engorgements it becomes harder, more solid, and very much like a fibrous growth." The principal symptoms of this large and retroverted uterus, are an additional weight in the lower part of the abdomen, a painful sense of pressure about the sacrum, and pain referred distinctly to the inguinal canals. There is pain also on sitting down, with a sensation as if some body was pressed upwards.

**Causes.**—Dysmenorrhœa may be induced accidentally by powerful mental emotions; or by anything which interferes with the process; hence, it may be owing to cold. We meet, however, with cases, in which it is difficult to discover the precise causes; and in which the female at every catamenial period suffers excessively, and is only relieved by the cessation of the menses. It is affirmed by Dr. Ferguson, that sexual intercourse, immediately previous to the expected flux, has excited the severest forms of the disease.

**Treatment.**—The treatment resolves itself into that which is proper during the interval, and that required during the attack. It is impossible to lay down any positive rules in regard to the former. The condition of the system must be narrowly investigated; and if the disease be owing to unusual impressibility, accompanied with want of tone in the system generally, a plan of treatment is required, which is adapted to improve the general health. With this view, the tonics and chalybeates recommended for the asthenic form of amenorrhœa are advisable here, with regular exercise in the open air, and the use of the warm or cold bath. Immediately, too, before the expected period, it may be advisable to make a new impression on the nervous system by full doses of opiates. Where, on the other hand, the dysmenorrhœa is accompanied by inflammatory symptoms, the antiphlogistic regimen should be adopted in the interval, and immediately before the expected period it may be advisable to draw blood from the arm, or from the loins by means of cupping, and to prescribe immersion in the warm bath. In the congestive and inflammatory varieties, if they may be so termed, rest is very important. The patient should be directed to confine herself to the horizontal posture for five or six weeks,—during which time, such remedial agents may be prescribed as the case may suggest. During the paroxysm, blood may have to be drawn in the more active variety; and, in all cases, the severity of the suffering must be allayed by full doses of opium, or of some of its preparations. The inhalation of ether has afforded eminent relief. Warm applications may, likewise, be made locally, in the form of fomentations, or of partial or general baths.

When no mechanical impediment exists to the flow of the catamenia, rigorous attention to appropriate measures may enable the female to pass one menstrual period without suffering; and if she be married, and be fortunate enough to become pregnant immediately afterwards, the resulting pregnancy and subsequent period of lactation may so far break in upon the morbid predisposition, that when the catamenial function is re-established, the dysmenorrhœa may not

recur. In one or two cases that have fallen under the author's care, this desirable event has been favoured by the new impressions made during travelling.

Dr. G. Bird affirms, that in the form of dysmenorrhœa which is unaccompanied by organic change, or attended by the discharge of shreds from the uterus, and in which the pain was referred to the lower part of the abdomen, immediately over the uterus, he has found belladonna, properly prepared, of the greatest efficacy. When the patient was of a leucophlegmatic habit, pale and chlorotic in appearance, he ordered five grains of extract of belladonna, and twenty grains of sulphate of zinc, to be divided into twenty pills, and of these one was ordered to be given immediately on the accession of pain, and repeated every two or three hours, until the pain ceased. When the patient was plethoric and of full habit, he substituted ten grains of ipecacuanha for the zinc, and the pills were given in the same manner. In the intervals of menstruation, cathartics were administered, and medicines tending to improve the general health. This treatment he had scarcely ever known to fail.

For the swelling and falling back of the uterus, described by Dr. Oldham as consequent on membranous menstruation, he especially recommends strict attention to the general health, leeching the cervix uteri once or twice a week, and small doses of mercury so as to slightly affect the gums.

Allusion has been made to a variety of dysmenorrhœa, termed *mechanical*, which has been ascribed to the small size of the os uteri, or to a narrowness or stricture in some part of the canal of the cervix. To remove this affection, it has been proposed to introduce a common metallic bougie, of which there are various sizes, from that of the metallic probe upwards. When Dr. Mackintosh published the 4th edition of his *Principles of Pathology and Practice of Physic*—he had treated twenty cases by dilating the os uteri, and had permanently cured eighteen. After that period he had other successful cases; for Dr. Churchill states, he had employed dilatation in 27 cases, and cured 24; of whom 11 had since borne children. The operation may be performed—the patient lying on the left side—by introducing the index finger of the left hand until it reaches the os uteri, for the purpose of directing the instrument to the part, which is then to be gently insinuated by a rotatory motion, until it arrives at the fundus of the uterus. Much force ought not to be employed, and little or no pain is said to attend the operation. Professor Meigs says, that he cannot boast of success equal to that of Dr. Mackintosh, perhaps because he has not confined himself to the selection of cases so strictly as Dr. Mackintosh may have done. The operation appears to him, however, to have been of advantage in several instances. In two ladies who were married, the dilatation was followed by relief, and in both the condition was so much improved, that they have continued to be in good health as regards the dysmenorrhœa: both have had children, one thrice, and the other twice, although they had never before been pregnant.

That dysmenorrhœa may be induced by this cause can scarcely, perhaps, be denied; yet we doubt not, that this is rare, inasmuch as



such a condition of the organ would prevent the flow of the menses altogether, or, in other words, occasion amenorrhœa; and—as has been already seen—in many cases of dysmenorrhœa, the discharge is more copious than usual. It has been properly suggested, too, by Dr. Ferguson, that the employment of a bougie may operate beneficially, by inducing a new action in the parts with which it comes in contact; and that this may be the salutary agency, rather than the mere mechanical dilatation. Recently, Dr. Simpson, of Edinburgh, has invented small bougies of German silver, about  $2\frac{1}{4}$  inches long, which he attaches to a temporary handle, and introduces them into the os uteri in such cases. After being introduced, the handle is unscrewed, and the bougies are suffered to remain for two or three days. They are said to be more convenient, and to cause less annoyance than ordinary bougies. He has also employed with advantage, in certain cases, a cutting stylet, where the obstruction has required division.

No allusion has been made to the various articles of the *materia medica*, which have been favourites with particular practitioners; as not one of them exerts any special agency over the morbid condition.

### 3. *Vicarious Menstruation.*

SYNON. *Paramenia erroris*; *Menorrhagia erronea*, *Mensium per aliena loca excretio*, *Aberratio mensium*, *Menses devii*, *Menstruatio per insolitas vias*, *Hæmatoplasia menstrualis*, *Menoplasia*; *Fr.* *Deviation des Règles*, *Règles déviées*; *Ger.* *Verirrungen der Menstruation*, *Menstruation auf ungewöhnlichen Wegen*, *Menstrualversetzung*.

Singular cases are on record, in which, during amenorrhœa, a discharge has taken place from some other organ, which has possessed the usual odour of the catamenia, but has generally seemed to consist of pure blood. No accurate analysis of the fluid has, however, been made; and, therefore, it is impossible to pronounce, whether the natural and the vicarious discharge were essentially identical. The whole subject of vicarious secretion is singular. We observe parts secreting from the blood ossific and other matters under special circumstances not capable of appreciation; and, in the same manner, during the *molimen menstruale*, if the catamenia cannot be separated by the ordinary outlets, a discharge may take place *vicariously* from other organs. Thus, we have cases recorded of vicarious menstruation from the eyes, nose, alveoli, ears, nipples, stomach, intestines, urinary organs, umbilicus, fingers, skin, &c. Two cases of this nature have been reported by Dr. Fingerhuth. In one, during suppression of the catamenia, in a healthy girl, eighteen years of age, the bleeding took place from a whitlow on the finger. The other case occurred in a girl, seventeen years of age, who had often felt the menstrual effort—without the occurrence of menstruation. She had suffered for some time under dyspnœa, palpitation, &c.; when, one morning, she found the right breast bloody. On examination, it was seen that the flow proceeded from a nipple-like excrescence on the breast. The phenomenon recurred irregularly for some time, until, ultimately, uterine menstruation was properly established.

**Treatment.**—In all cases of vicarious menstruation it is important to

inquire into the cause of the aberration, both as regards the system in general, and the uterus in particular; and, moreover, to attend to the condition of the part whence the vicarious discharge proceeds: most commonly, perhaps, this is from the stomach, and it is generally an affection of but little moment.

The remedies usually demanded are those recommended under Amenorrhœa. The state of the system is commonly one of asthenia, and, accordingly, chalybeates are needed, with all the tonic agencies advised under that head. Unless the condition of the system contra-indicates its employment, bleeding, either from the arm, or from the loins by cupping, to the extent of from four to eight ounces, immediately before the expected period, and the use of a saline cathartic<sup>a</sup> for a week previously, may prevent the afflux to the organ vicariously affected; and the case may be converted into one of simple amenorrhœa.

<sup>a</sup> R.—Magnes. sulphat. ℥ij.  
Acid. sulph. dil. gtt. xv.  
Aquæ f ℥vj.—M.

Dose, a tablespoonful, night and morning.

The treatment will, of course, have to be modified according to the particular parts that may be concerned in the vicarious discharge. It has been properly remarked, that the state of the organ probably assists in determining the discharge to it, just as when the skin is ulcerated the vicarious flux may be seen to exude monthly from the diseased rather than from the sounder surface. Hence it is, that vicarious hæmoptysis is perhaps of more consequence than any other form; and partly, also, because there is danger—even if the discharge should be a mere transudation of blood through the parietes of the containing vessels—that a predisposition may be left to some other pulmonary affection.

#### 4. Menorrhagia.

SYNON. Hæmorrhagia uteri, Metrorrhœa sanguinolenta, Hysterorrhagia, Hæmorrhœa, Metrorrhagia non gravidarum, Immoderate flow of the menses, Excessive menstruation, Uterine hemorrhage: *Fr.* Hémorrhagie de l'Utérus, Hémorrhagie utérine, Pertes de Sang, P. utérines; *Ger.* Gebärmutterblutfluss, Mutterblutung.

The word *menorrhagia* has been used in different significations: sometimes, merely to indicate—in accordance with its derivation—a more copious flow than usual of the catamenia at the regular monthly periods: more commonly, however, it is extended to cases, that appear to be directly or indirectly connected with the menstrual function. It is not easy to discriminate those cases at all times; and, consequently, it is better perhaps to include under the term all those abnormal sanguineous discharges, that occur in the unimpregnated uterus. This definition, of course, excludes uterine hemorrhage, which occurs as a complication of pregnancy and parturition; and which is dependent upon very different causes from the hemorrhage now under consideration. It has, indeed, been proposed, that the term *menorrhagia* should be applied not only to an increase in the catamenia, without any admixture of other fluids, but to any discharge of blood that may accompany or succeed the menstrual evacuation, whilst uterine hemor-

rhage should be applied exclusively to flooding connected with pregnancy and parturition, and it is in this sense that it will be employed here. It not unfrequently happens, that the flow at the monthly period is so much more copious than usual, that it resembles more a case of flooding than one of ordinary menstruation. Still, the discharge possesses the peculiar odour of the catamenia, and if it be esteemed pure blood—as it is by some—it must be admitted that it does not contain the ordinary quantity of fibrin, for it does not coagulate. Profuse menstruation may, however, be combined with unquestioned hemorrhage from the uterus; and in such case, a portion of the blood may coagulate, as under ordinary circumstances.

Copious menstruation cannot always be regarded as a disease. There are some females, who always menstruate largely, but whose health does not appear to suffer; but when the discharge takes place more frequently and freely than usual, and manifestly produces an injurious effect on the general health, it is a condition which requires the attention of the practitioner. It is often, too, found to alternate with leucorrhœa. At times, true blood, differing but little, if at all, from that which flows in the veins, is discharged copiously and irregularly, so as to make serious inroads on the health of the female. This is especially the case about the period of the cessation of the menses, when the hemorrhage may be so great as to excite alarm,—the patient becomes debilitated, pale, and—if the discharge continue long—almost exanguious,—presenting, in fact, all the characters of anæmia, with the functional disorders elsewhere described as resulting from it. (See ANÆMIA, and CHLOROTIC CACHEXIA.)

**Causes.**—An immoderate flow of the menses, or true uterine hemorrhage, may occur in the plethoric, as well as in those of an opposite habit, where there is no organic disease of the uterus. Not unfrequently, however, it is a mere symptom of uterine disease, and especially of polypus; of corroding ulcer or cancer of the uterus, hydatis, &c. Hence, the necessity, in obstinate cases, of making an accurate examination into the condition of the uterus.

As not uncommon causes of functional menorrhagia are reckoned;—heated rooms, and warm bathing carried to excess. “Mechanical irritations, excessive venery, some of the pathemata, as fear or anger,” have, also, been classed amongst the predisponent causes.

In one predisposed to the disease, all severe exercise in the upright posture, as riding on horseback, or in a carriage not well hung, or over rough roads, may induce it. It can be readily understood, too, that whatever diminishes the consistence of the blood will facilitate its transudation through the uterine vessels, and hence, that chlorosis and every form of anæmia may be accompanied by uterine hemorrhage, as they are apt to be attended by transudations of blood from other mucous membranes.

**Treatment.**—Where the case is simply one of greater flow of the menses than usual, it may pass off without farther cares than confinement to the horizontal posture on a hard mattress or couch; but, occasionally, evidences of active hyperæmia of the uterus exist, which may require the abstraction of blood from the arm, or by means of

leeches to the anus, or of cupping on the loins. More frequently, however, the affection occurs in persons of a habit opposite to the plethoric, and where abstraction of blood to any amount is inadmissible. In such cases, and indeed in hyperæmia of the uterus occurring in any habit, it has been advised to apply a few leeches—one to four—to the cervix uteri by means of the leech-tube. The remedy is, unquestionably, of occasional service; but there are so many inconveniences attendant upon its application, that it is not often used. The author has seen inflammation of the lining membrane result from the leech-bites, and, in one case, alarming hemorrhage, which could only be checked by the most powerful astringents, aided by plugging the vagina.

During the interval between the regular periods, every endeavour must be made to appreciate the pathological condition, that gives occasion to the immoderate flow; and if it be found to be dependent upon too great fulness of blood, the diet should be restricted; and for some time before the expected period, the patient should keep the horizontal posture, and a few ounces of blood may be taken in the manner already directed. Where, on the other hand, the system is asthenic, it may be advisable during the attack, as well as in the intervals, to administer tonics. The preparations of iron—advised under CHLOROSIS—are here appropriate; and if the patient can have the advantage of sea air and sea bathing in the proper season, it may be highly advantageous. It can rarely perhaps be advisable, in simple immoderate flow of the catamenia, to throw any astringent injections into the uterus. It is affirmed, indeed, that the discharge has been suddenly arrested by them, and that inflammation of the uterus has followed.

In the menorrhagia which consists in true hemorrhage from the uterine vessels, the same inquiry is essential as to the causes that may be concerned in its production—whether, for example, it be owing to polyæmia, or to a condition approximating rather to anæmia; or, again, to some organic disease of the uterus itself; and, as in other hemorrhages, the treatment has to be modified accordingly,—in one case, bloodletting, and the whole antiphlogistic treatment and regimen being needed, whilst, in the other, an opposite course may be advisable. There is not the same objection to astringent injections in this form of menorrhagia as in that which consists merely in an increase of a natural secretion or discharge; and, accordingly, astringent injections are much used by many practitioners, especially where the disease is of the chronic kind. Any of the astringent injections, advised under leucorrhœa, may be prescribed for this purpose. During the activity of the discharge, especially if signs of hyperæmia of the uterus exist, the lumbar and sacral regions may be sponged with cold water, or cold vinegar and water, and cloths dipped in the same may be applied to the vulva; but care must be taken, that too great a shock be not induced by the impression of the cold, as the blood might, under such circumstances, be distributed irregularly towards the internal parts of the organism, and an increase of the hemorrhage be the consequence. Should the discharge be excessive,

the *tampon* or plug may be used, which will generally arrest it; and if not, compression of the abdominal aorta before its bifurcation may be attempted. This is more easy after delivery, as the intestines, which have been pressed up by the gravid uterus, do not immediately resume their position, and there is space for the fingers to press upon the artery.

By treating the disease on general principles, the acute stage—if it may be so termed—will pass away in a few days, and the flow may entirely cease; but, in other cases, it becomes chronic. It is then, that astringent injections are most advantageous. Remedies of the astringent class, too, are generally administered internally, but they are certainly of limited utility. As before remarked, the condition of the system has to be attended to in all cases of hemorrhage, and we probably obtain but slight advantage from internal styptics. Many modern writers have spoken well of ergot in such cases, in the dose of from five grains to a scruple three times a day or oftener, and of ergotin, in the dose of two grains every two hours. Monesia, an article of modern introduction, (*Mones. gr. iij.* every hour or two,) has also been given by different practitioners, in various forms of hemorrhage from the uterus; but perfect rest, cold drinks, and other appropriate agencies were recommended at the same time; and hence it is difficult to define its precise agency; and the same remark applies to the ergot, and to internal styptics in general. (See the author's *New Remedies*, 5th edit. p. 282, Philad. 1846.)

At a meeting of the Medico-Chirurgical Society of Edinburgh, April 19, 1843, Professor Simpson stated, that for the preceding year he had employed gallic acid in some cases of menorrhagia with the most successful results. Like all other remedies, however, it had occasionally failed in his hands. Some of the cases cured by it had previously resisted other remedies, and were of a very aggravated description. He gave it during the interval, as well as during the discharge, in doses of from 10 to 20 grains, in the 24 hours, made into pills. It possessed this advantage over most other hæmastatic agents, that it did not constipate the bowels. He was first induced to prescribe it, from finding a case of very obstinate menorrhagia get well under the use of Ruspini's styptic, after many other remedies had entirely failed; and from its being alleged, that gallic acid is the active ingredient in that styptic. It has received high encomiums from Dr. Stevenson and Messrs. Ballard and Garrod in similar cases. The infusion of matico has lately been given with great advantage where an internal styptic was needed; and recently, Sir James Eyre has affirmed, that in the treatment of profuse menstruation, according to his experience, the oxide of silver is superior to ergot, gallic acid, and, indeed, all other remedies. He gives it in the dose of half a grain, three times a day, gradually increasing the dose to one or two grains. It has, also, been extolled by Mr. Lane. In very obstinate cases of the atonic kind, Dr. Chapman and others have found the best effects from the employment of emetics. He uniformly employs ipecacuanha.

In atonic cases, direct stimulation of the uterus by means of elec-

tricity or galvanism, magneto-electricity or electro-magnetism, may be advantageous.

The diet, in every form of menorrhagia, must be regulated according to the attendant symptoms. If plethora exist in the intervals, it must be restricted: if, on the other hand, anæmia predominate, the diet may be more generous, and it may be advisable to allow easily-digested animal food, with the view of supplying a larger amount of solid materials to the fluid of the circulation. With the same view, not much fluid should be allowed for common drink. Where the quantity of blood in the vessels is diminished, watery fluids readily pass through the parietes of the vessels, and make up the quantity of blood, but it is blood thinner than natural, and therefore itself adapted for more ready transudation. The great object, in these cases, is—by diet and medicine to add to the spissitude of the blood, and to improve the nutrition of the parietes of the vessels, as well as of every organ of the body.

Where the menorrhagia is connected with organic disease of the uterus, this will have to be diagnosticated by appropriate examination, and the patient must be put upon a treatment adapted for its removal. The hemorrhage, in such case, is accidental or symptomatic; but still it may be palliated by the horizontal posture,—great mental and corporeal quietude, the use of opiates, of astringent injections, and the tampon, when the discharge is excessive.

### 2. RHEUMATISM OF THE UTERUS.

SYNON. Rheumatismus uteri, Metrorrhœma, Hysteralgia rheumatica seu catarrhalis; *Fr.* Rhumatisme de l'utérus; *Ger.* Rheumatismus der Gebärmutter, Gebärmutterfluss.

Although this affection has long been described, and is referred to in all German pathological works, it has not received much attention from English or American writers. It may attack both the impregnated and unimpregnated female; but is of more interest in the former.

**Diagnosis.**—The character of the pain in the region of the uterus varies; but generally it is very acute, and at times so insupportable as to cause the patient to scream out. The pains are often expulsive, and there is more or less rheumatic fever and sweating accompanying it, with great tenderness on pressure; and incapability of moving from the horizontal posture on the back. If it continues, metritis may supervene; and, if the female be pregnant, abortion.

**Treatment.**—Rheumatism of the uterus must be managed in the same manner as acute rheumatism affecting other parts. Opiates, in full sedative doses, will be found most advantageous; and leeches and emollient fomentations will constitute the most advisable local applications.

### 3. NEURALGIA OF THE UTERUS.

SYNON. Hysteralgia, Irritable uterus; *Fr.* Névralgie de l'utérus; *Ger.* Gebärmutter-schmerz.

It is generally admitted, that the attention of practitioners was first directed to this affection by Dr. Gocch. It is one of extreme suffering, at times, and gives rise to much anxious attention, both on the part of the patient and the practitioner.

**Diagnosis.**—The patient complains of pain in the loins, and round the brim of the pelvis, which is constant, but liable to aggravation, especially after mental excitement, or, indeed, excitement of any kind. The paroxysms may come on at any time; but, most frequently, perhaps, they are observed a few days prior to, or after menstruation, the recurrence of which is commonly unmodified, until the disease has continued for some time, and injuriously affected the whole organism. Sooner or later, this is apt to be the result, for the suffering is so great as to compel the patient to assume the horizontal posture, which is always, or almost always, found to afford relief. During the greatest anguish, the pulse is usually unaffected, and this is one of the distinguishing characters of the disease,—chronic metritis always exhibiting more or less morbid activity of the circulatory movements.

If an examination be made *per vaginam*, great pain is experienced on the slightest pressure, which continues for some time afterwards, so that the patient dreads a repetition of the exploration. At times, in such cases, no abnormal condition of the os or cervix uteri can be detected; but, at others, the cervix uteri is puffy and swollen, so that, under the great suffering, the practitioner is apt to believe that there is serious organic disease of the uterus.

**Causes.**—These are not always appreciable. Those assigned to it are—bodily exertion when the uterus is in an irritable and excited state, as during menstruation; using too much exertion soon after abortion or delivery; and mechanical and other injuries to the uterus, as from excessive coition, or the employment of astringent injections. It would appear, likewise, to have been caused by great fatigue, from dancing, late hours, long carriage journeys, &c. They, who are most subject to it, are the young and middle-aged,—the aged being rarely or never attacked. It never, perhaps, destroys life; but long confinement and suffering may make serious inroads in the health. The author has, frequently, however, seen patients, who have not been able to leave the couch for months and even years, and yet retain all the appearance of full health. The disease is always exceedingly tedious, but, after having continued for years it occasionally terminates suddenly in health, to the surprise of every one. The powerful mental revulsion, induced by the animal magnetizer, and by kindred arts, has occasionally effected a cure in a manner, that has been esteemed almost miraculous. The author attended a case, which had confined the patient to bed for years; she was persuaded to subject herself to protracted worship at a certain period and to prescribed ceremonies, suggested by Prince Hohenlohe; after which she found herself able to leave her bed.

**Treatment.**—The disease being essentially a neuralgia of the uterus, the treatment will have to resemble that of neuralgia in general. The violence of the pain must be allayed by the narcotics advised under Neuralgia; and counterirritation be practised by means of small blisters to the loins, or by dry cupping; an opium or belladonna plaster may, likewise, be applied to the lumbar or sacral region. Warm injections, as the infusion of the slippery elm, or of benne, or of the decoction of poppyheads, may be thrown into the vagina or rectum two or

three times a day. The bowels must be kept open, but only the mildest means should be used for this purpose, as the irritation may be propagated by continuous sympathy to the uterus, and the suffering be thus augmented.

In many cases, rigorous confinement to the horizontal posture is indispensable; but this should not prevent the patient from being carried into the open air, and from enjoying the revulsion, which carriage exercise is capable of affording. "A generous diet," says Dr. Ferguson, "but so as not to burden the stomach, fresh air, a gradual and sustained course of steel, and narcotics locally applied, are the best means of attacking this capricious and obstinate disorder. The worst are low diet, the constant supine posture, close confinement and depletions, whether by purgatives or by bleeding. With the former, the malady will be subdued or will subside; with the latter, the health, and even the life of the patient are endangered."

Dr. Ferguson has alluded to a painful state of the vagina, analogous to the affection of the uterus just described, and which might be termed *Neuralgia of the Vagina*. Of this, the author has seen a few instances. It is characterized by excessive tenderness, when the lining membrane is touched by the finger, or the male organ; hence, sexual intercourse cannot be indulged; or if it be, it may give occasion to an attack of hysteria. Yet examination of the membrane may exhibit no variation from the healthy state. All the patients, seen by Dr. Ferguson, were married, and of extreme nervous susceptibility. Those, also that have fallen under the author's care were married; but, in their general impressibility, there was nothing remarkable. In some, the painful condition is said to have supervened on the birth of a first child, and the patients never conceived afterwards: in others, it would seem to have been developed by marriage, and was not removed by repeated child-births.

The *treatment* is essentially that adapted for neuralgia of the uterus; but the affection is apt to resist every effort, so that the patient is compelled to endure it through life; and to avoid those exciting influences, which she knows develop suffering.

### III. DISEASE OF THE OVARIES.

The diseases of the ovaries, that are most important to the therapist, are inflammation and dropsy—the latter of which is of most frequent occurrence: both will demand some consideration.

#### 1. *Inflammation of the Ovary.*

SYNON. Ovaritis, Ooritis, Oophoritis, Inflammatio ovarii; *Fr.* Ovarite, Inflammation de l'ovaire; *Ger.* Entzündung der Eierstöcke, Eierstocksentzündung.

Inflammation of the ovary may occur both in the acute and chronic form, but it is not often met with except as an accompaniment of peritonitis or metritis, and, in such case, it generally succeeds to abortion or delivery: it is rarely, perhaps, witnessed in the unimpregnated female. It may occur, however, independently of any inflammatory affection of the surrounding textures.



**Diagnosis.**—When acute inflammation of the ovary is accompanied by metritis or peritonitis, it may be difficult—if not impracticable—to detect the ovarian phlegmasia. When the ovary is affected alone, burning pain will be experienced deep in the side of the pelvis in which it is situate, accompanied by the ordinary general symptoms that appertain to acute inflammation of the internal viscera. Usually, however, the constitutional affection is not severe. Even if the inflammation should commence in the ovary, it is rarely, perhaps, restricted to that organ, but spreads to the peritoneum; and, under such circumstances, the tenderness on pressure may be more marked, and the pain may shoot to the corresponding groin and thigh.

Not much information can be obtained by examination *per vaginam*. M. Leroy d'Etiolles, however, speaks of having detected the ovarian tumour—owing to its sinking down—by the finger, in the vagina. The finger, passed into the rectum, according to M. Löwenhardt, can reach the situation of the ovary, and may discover any tumefaction of the organ, or unusual tenderness on pressure. Pain is, likewise, experienced by the pressure of the distended rectum, during the act of defecation.

In the *chronic* form of ovaritis, the local phenomena are of the same character as in the acute, but less in degree; and it must be diagnosed by the same mode of exploration. The disease is, however, necessarily more obscure.

Inflammation of the ovary, both acute and chronic, may terminate by resolution, by tumefaction and induration or softening, by suppuration, the formation of serous cysts, fibrous tumours, &c. &c.; and when both ovaries are affected, the menstrual function is interfered with,—generally, indeed, suspended,—and sterility is a common consequence of the ovarian changes.

**Pathological Characters.**—On the dissection of those who have died whilst affected with acute ovaritis, the organ is found to present the ordinary appearances of inflammation,—as injection, and tumefaction with softening. Serous effusion occurs early into the structure of the organ, and the fluid is not unfrequently found mixed with pus. Coagulable lymph may, likewise, be thrown out at the peritoneal surface of the ovary, and adventitious union be formed with various parts in the vicinity. This is especially the case in the chronic form of the disease. The author has seen an instance in which the fimbriated extremity of the Fallopian tube was adherent to the serous covering of the ovary. Where suppuration had taken place, the pus has been found collected in various small abscesses, and, at times, a communication has been formed between them and the bladder or rectum, so that the matter has been evacuated by those outlets.

Chronic inflammation may be the cause of various organic diseases of the ovaries, by developing a condition of the system, and of the vessels of the part, which may lay the foundation for the nutritive irritation resulting in the formation of heterologous productions.

**Causes.**—Inflammation of the ovary would seem to have been most frequently induced by sudden suppression of the catamenia, or by irregular exposure during the menstrual period. Most frequently, however, it

follows labour, and has often been observed amongst the morbid appearances in puerperal fever. It has been affirmed, that, females, affected with gonorrhœa, are liable to it, in the same manner as males, affected with the same disease, are liable to orchitis: a recent writer, however, Dr. Simpson, states, that he has watched diligently for its occurrence in some hundreds of cases of gonorrhœa, that have been under his care in the Lock Hospital, of Edinburgh, but that he has only met with one, and that a doubtful instance of it. In two cases, recorded by M. Leroy d'Etiolles, the disease supervened on the use of uterine injections. The injections were sent with moderate force into the uterus by the aid of a gum-elastic tube. In one, the quantity of infusion of marsh-mallows was ten drachms; and in both cases, the liquid had scarcely reached the cavity of the uterus, before the patient complained of acute pain in one side.

**Treatment.**—This differs in no respect from that which is adapted for inflammation of the uterus.

## 2. *Dropsy of the Ovary.*

SYNON. Hydrops ovarii, Ascites ovarii, Ascites saccatus, Hydroöarion, Hydroöphoron, Encysted dropsy of the ovary; *Fr.* Hydropisie de l'ovaire, Kystes de l'ovaire; *Ger.* Wassersucht der Eierstocke, Eierstockswassersucht.

The ovaries are liable to various diseased conditions;—some of them exhibiting strange anomalies in the function of nutrition. Tumours of different kinds have been found originating in them, and in the interior of these, fat, fluids of various characters, and even hair! the result of ovarian conception. Perhaps the most common affection is the one under consideration, in which an accumulation of fluid takes place in one or more cysts,—the ovaries themselves being more or less diseased in other respects, and forming, at times, fibro-scirrhous tumours of an enormous size.

**Diagnosis.**—The symptoms of encysted dropsy of the ovary are generally sufficiently clear; but, at times, the diagnosis is difficult. Instead of the fluid—as in dropsy of the peritoneum—being spread equally over the abdomen, the tumour appears as if formed by a fluid contained in a sac, and commonly it is unequal, in consequence of solid matter being deposited in connexion with it. In cases of unilocular dropsy, or in other words, in those in which the fluid accumulates in a single cyst, this last condition may not be apparent; but when it is multilocular, or consists of many cysts, the solid septa are often distinctly perceptible through the abdominal parietes. The fluid, which is contained in these cysts, is generally very different from that of ascites,—being, at times, watery, but generally viscid; and hence the name *dropsy of the ovarium*, as applied to these cases, has been objected to by Mr. Burns.

Similar tumours sometimes form, which are connected with the uterus, and are, occasionally, of a very considerable size. These are usually considered to be ovarian, until dissection reveals their true character. A case of the kind fell under the author's care in the Philadelphia Hospital, and died under that of the author's successor in the wards, Dr. Pennock, who has well described it. The tumours

measured three feet in the vertical direction, and four feet eight around, at the umbilicus; and in them were found several gallons of a fetid, yellow, brown, thick and viscid fluid. These tumours were connected with the uterus, but not with the ovary. Many similar tumours have been described by recent observers, some of which gave rise to equal difficulty of diagnosis.

These cases are distinguished from ascites by the fact, that in encysted dropsy of the ovary, the intestines are situated behind the uterus, whilst in ascites they float above it. In the latter disease, too, more difference is observed, when percussion is practised, according to the position of the patient. The situation of the intestines is of course readily recognised by percussion.

The disease may attack both ovaries, and, in such case, the catamenia may be arrested; but ordinary ovarian dropsy is not inconsistent with the existence of menstruation. As a general rule, the tumour is first felt in one groin or in both, according as one or both of the ovaries may be implicated, whence it gradually spreads upwards, as the fluid augments in the sac or sacs.

Dropsy of the ovary generally proves fatal sooner or later; but many females bear about ovarian tumours and encysted dropsy of the ovary for years; a circumstance that distinguishes these from ascites, which is almost always symptomatic of serious visceral disease. After the disease has undergone a certain degree of development, the morbid process is arrested, and this is the most fortunate result that can be expected. It rarely, if ever, happens, that the morbid depositions are removed by absorption.

It need scarcely be said, that the functions of the bladder and rectum may be interfered with by the pressure of the tumour; and in all cases, exploration of the vagina or rectum may throw some light on the nature of the affection in the early stages.

In rare cases of ovarian dropsy, the disease would appear to have terminated by absorption of the fluid. At other times, adhesion takes place between the ovary and the intestines, bladder, vagina or rectum, into which the cyst may open, and the fluid be discharged; or the patient may die of ovaritis before or after tapping; or, lastly, the parietes of the cyst may give way, and the fluid be discharged into the cavity of the peritoneum and induce peritonitis.

**Causes.**—Of the causes of dropsy of the ovary we know nothing. It would seem that no age is exempt from it; but it is most frequently seen about the period of the cessation of the menstrual function.

**Treatment.**—It is a general opinion with therapeutists, that no plan of internal treatment is of any advantage. The cysts are there, and it appears to be a hopeless task to endeavour to remove them; granting even that it were possible, by internal means, to take away the fluid from them. In the very early stages, especially if there be any inflammatory complication, general or local bloodletting may be needed;—but when such complication does not exist, and the dropsy is fully formed, the agents that are calculated to afford benefit, are those recommended under **DROPSY OF THE PERITONEUM**,—diuretics, cathartics, methodical compression of the abdomen, &c. Should impediments

exist to the evacuation of the bladder, they may be obviated, at times, by pushing upwards the impacted portion of the tumour above the brim of the pelvis.

When the fluid collection has attained such a size, that it interferes mechanically with the action of any of the vital organs, it is important to remove it by paracentesis. This is, however, only a palliative measure. Rare cases are on record, in which it would seem to have succeeded radically; but this result is not to be expected. It is in these encysted dropsies, that the astonishing quantities of fluid are discharged, which have been recorded; for there is less suffering and danger from the operation in encysted dropsy than in ordinary ascites. It is best performed, perhaps, by the common lancet, and the female catheter; but where the fluid is tenacious, it may not flow through the eyes of the instrument, and the trocar may be necessary.

It has been suggested, that a stimulating fluid—as a solution of iodine—should be thrown into the sac after the removal of the dropsical accumulation; but this must necessarily be a hazardous procedure. It has, however, been done with impunity; and recently by Dr. B. A. Allison, of Spencer, Indiana. The same has been said of incisions made into the diseased ovary through the abdominal parietes, so as to form an external fistula communicating with the cavity of the tumour, through which the fluid may be discharged; yet many successful cases are recorded; and an interesting communication has been recently published by Mr. W. H. Bainbrigge, of Liverpool, in which he details the particulars of a case treated in this manner, by opening the cyst, evacuating the contents, taking care that none of the fluid escaped into the peritoneal cavity; removing a portion of the cyst, fixing its edges to the outer wound in the abdominal parietes, and inserting a plug so as to prevent a union of the edges of the wound and closure of the opening: suppurative action was established; the cyst finally contracted and disappeared, and the patient ultimately got well. In a subsequent number of the journal in which his first communication appeared (*London Medical Gazette*, April, 1847), Mr. Bainbrigge has published a list of eighteen cases treated on a similar principle, and nineteen cured by spontaneous opening of the sac.

Lastly. It has been proposed to completely remove the diseased ovary, either by opening the abdomen freely, and extirpating the tumour in its entire state; or by making a smaller incision through the abdominal parietes; evacuating the tumour by tapping, and immediately afterwards drawing it out, in its empty and collapsed state, and cutting it off as near the root as possible. But all these are formidable operations, and although success has followed them in some cases, they ought certainly not to be had recourse to except under urgent circumstances, and after the most mature deliberation. Such, indeed, is the view maintained by Dr. Clay and Mr. Walne, who have performed successful operations on cases that would usually have been regarded as admitting of little or no relief. They are confirmative of views, long ably urged by Dr. Blundell, that incisions into the peritoneal sac are not necessarily so serious as has been generally imagined.

The FALLOPIAN TUBES and BROAD LIGAMENTS are subject to many of the same forms of disease as the ovaries,—for example, to acute and chronic inflammation. The diagnosis from ovaritis is by no means easy; nor is it a matter of moment to the therapist, inasmuch as the same plan of treatment is necessary.

## B O O K I X.

### DISEASES INVOLVING VARIOUS ORGANS.

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THERE is a large class of diseases, and these of the most important and interesting character, which it is difficult—if not impossible—to trace to any particular organ; and in which the mischief invades different organs and apparatuses. It appears, however, to be so difficult to conceive, that a morbid agency can impress different parts of the economy at the same time, so as to induce a general disturbance of functions simultaneously, that the fact of a general disease has been denied, and it has been maintained, that in such cases a pathological condition first arises in some organ or tissue, whence the disease spreads, by sympathy, to other parts, until, ultimately, the whole organism becomes invaded.

Unquestionably, in the generality of instances—if not all—the morbid impression must be made upon a part of the economy, in the first place,—upon the surface with which it comes in contact, and whose vital properties it affects, yet it is difficult to conceive, that the surface is in all cases rendered organically morbid; its functional phenomena may, indeed, be so slightly modified, as not to be indicated by any perceptible symptom, and the induced disease may be first manifested by disorder in one or more of the functions of innervation, circulation, or secretion. A good example of this occurs in a disease, the progress of which we are enabled to trace from the first application of the morbid agent,—smallpox, produced by inoculation. When the virus has been introduced under the cuticle of the arm, or of any part of the body, so that it comes in contact with the blood-vessels, it is absorbed into the circulation; yet, for a period, which is nearly identical in all cases, the cause appears to exert no functional phenomena, until ultimately a general rigor indicates the disturbance, which has been induced. In this case, it is impossible to pronounce as to the part of the system first impressed: the symptoms would lead us to infer the nervous system; but probably careful examination would indicate simultaneous, if not precedent, disorder of the circulatory or secretory functions, or both, after which the disease becomes manifested by the supervention of rigors or other decidedly morbid phenomena.

## CHAPTER I.

### FEVER.

SYNON. *Febris, Pyretos, Pyr, Pyrexia; Fr. Fièvre; Ger. Fieber.*

THE subject of fever has given rise to as much difference of sentiment as that of inflammation; and, perhaps, we may add, to as much useless speculation. Definitions are proverbially difficult, and there is none on which pathologists have differed more widely, than on that of the morbid condition under consideration. Dr. Christison thinks, that no better definition can probably be found, than the following, which is a modification of that sanctioned by Cullen:—"After a preliminary stage of languor, weakness, and defective appetite—acceleration of the pulse, increased heat, great debility of the limbs, and disturbance of most of the functions, without primary local disease." He properly remarks, however, that it is a singular instance of the extreme difficulty of arriving at correct nosographical definitions, that scarcely any one of the characters here assigned is absolutely invariable; and he adds, "nor is it likely that any other definition will be found, which is not subject to the same defect."

It is obvious that the last member of Dr. Christison's definition involves an admission, which is by no means sanctioned by a number of the pathologists of the present day, and which was vigorously combated a few years ago, under the influence of the captivating doctrines of M. Broussais. M. Rostan has, indeed, boldly affirmed, that the class of continued fevers can no longer be preserved, and that they should disappear from every philosophical classification. "These diseases," he remarks, "are but visceral phlegmasiæ, presenting symptomatic varieties. Some are simple phlegmasiæ; others have a special character: amongst the first, we place inflammatory fever, which is nothing more than a gastro-intestinal, or other phlegmasia; little marked locally, but producing very intense sympathetic general symptoms, and manifesting itself in sanguine and plethoric individuals. Perhaps, in some cases—much more unfrequently than has been presumed recently—the circulatory system, and principally the aorta, the heart, and the large vessels are the seat of the irritation; but the cases, adduced in support of this opinion, have not appeared to us to be entirely conclusive. It is unquestionable to every unprejudiced mind, that the bilious or meningo-gastric fever of authors is nothing more than simple gastro-enteritis, occurring in an individual endowed with a predominance of the digestive system. Mucous or adeno-meningeal fever is certainly, also, an inflammation of the greater part of the mucous membranes, supervening in particular localities, and in individuals of an atonic temperament. Dothinenteria, also, appears to be nothing more than the mucous fever of authors, presenting, in this case, a special character. The same phlegmasia may assume the form of the putrid or adynamic fever. But this adynamic form, this prostration of the powers, may accompany every intestinal,

thoracic, encephalic and other phlegmasia. This fever is but one of the forms of these different inflammations, and not of gastro-enteritis exclusively. Is it the fact—as has been recently stated—that the blood is in a state of putridity in this pretended fever? Although we may admit an incontestable alteration of the fluids, it appears to me necessary to wait for further observations, before we can pronounce on so grave a subject. The experiments of MM. Gaspard, Magendie, Leuret, and others, render this opinion, however, very probable. Malignant ataxic fever presents, too evidently, the symptoms of meningitis, to render their identity a matter of dispute. It is possible, also, that these inflammations of the brain and its envelopes may be induced by a special cause, as by animal matters in a state of putrefaction, &c. Under such circumstances they doubtless have a special character, which entrains the greatest danger, and requires a special treatment. It is scarcely necessary to repeat, that slow hectic fevers are nothing more than fevers that are symptomatic of chronic phlegmasiæ of different viscera."

These are the views of one who is a strenuous maintainer of the doctrine of the local seat of fever in the first instance. In this he is supported by many distinguished members of the profession in his own country, most of whom, however, differ as to the precise part of the economy to which the primary mischief ought to be referred. One of the most recent pathological writers on the subject, M. Bouillaud, affirms, that fever is an affection symptomatic of irritation, or of general inflammation of the circulatory system; inflammatory fever is one of the degrees only of this irritative or inflammatory state; and the other forms of supposed primary fever are mere complications, arising, sometimes, from inflammation of the mucous membrane of the alimentary canal and its follicles. Yet there are others who appear to us to be more correct in their deductions, and who, in their definitions of fever, cautiously avoid committing themselves on the question of local lesion. Thus, a modern writer, M. Dubois d'Amiens, considers, that "fever expresses a state, in which are observed,—variations in animal heat, acceleration of the pulse, and general disorder of the functions; with or without local lesion." Perhaps, on this question, as on many others—where due care has not been taken—the researches of the pathological anatomist have induced error. It is not always easy, even with careful observers, to distinguish between the hyperæmic condition which is the result of inflammation, and that which may be termed *cadaveric*. Simple hyperæmia of vessels in the dead body, without organic change in a part, is very rarely a pathological state—never, perhaps, sufficient to account for a protracted disease like continued fever. Yet, at a time when it was fashionable to consider all fevers to be gastro-enteritis, simple or complicated, hyperæmia of the gastro-enteric mucous membrane, observable on dissection, was found all-sufficient to account for the phenomena!

But even were we to admit, with the followers of M. Broussais, that fever is originally seated in the lining membrane of the stomach and bowels, or with those of Dr. Clutterbuck, that it is in the encephalon, the difficulty would arise, when evidences of these morbid conditions



are found on dissection, to determine whether they constitute a primary lesion, or be the result of morbid conditions occurring in the course of the disease. Pathological anatomy—with heedless, or too enthusiastic observers—has too often been invoked to establish the former of these positions; but, at the present day, the general belief is, that these lesions are less frequently the evidences of primary local aberration than of pathological conditions which have supervened in the course of the disease. Such is the view which the author has always been led to adopt. As in the case of every other disease, not induced by any mechanical cause, the first impression must be made on the contractility or vital properties of the part with which a morbid agent comes in contact; the functions of nutrition of the part are modified; and by the extensive correspondence which exists between every part of the organism, through the nerves and otherwise, parts at a distance become implicated. Of the extent of this consent between different parts of the organism, both in its therapeutical and pathological relations, the author has had frequent occasion to speak both in the present work and elsewhere (*General Therapeutics and Mat. Med.* 3d edit. ii. 204, Philada. 1846.) “In the healthy state of the frame, it is evinced by the morbid influence of cold and moisture, when applied even to a small portion of the cutaneous surface, which has been previously shielded from their action. If a healthy person expose his feet to these agencies, the capillary function becomes modified, and there is not a part of the capillary system which does not feel the effects; but disease is not induced in the whole, unless the whole is, at the time, predisposed to assume the morbid condition. Generally, there is some portion of the capillaries more disposed, at the time, to take on a diseased state than another, and, under the irradiations that occur, owing to the modified action of the capillaries of the feet, disease in such portion results. A similar action takes place when we apply cold and moisture therapeutically, as is done in febrile affections, whenever the skin is steadily hot and dry; and we find it is not necessary, that these agents should be applied over the whole of the cutaneous surface, but only over a comparatively small portion, as over the hands and arms. The sedative influence of the cold is exerted upon the capillaries, with which it is made to come in contact; the function of calorification has its activity diminished, and soon afterwards we discover, that the heat of the whole system has been manifestly lowered by the application.” And, again, (*Ibid.* p. 356.) “In the case of smallpox inoculation, a minute portion of variolous matter is inserted under the cuticle, is brought in contact, in other words, with the corpus papillare, and with the divided vessels of that body,—and we can predict, that, in a proper subject, a fever will break out, in a certain number of days after inoculation; and that, after a definite period, an eruption will make its appearance, which will go through its regular stages of increment, maturation and declension, leaving the patient, after a time,—which, in favourable cases, equally admits of prognostication,—perfectly well. It is assuredly not easy to conceive how this extensive secretion of morbid poisons can take place, without presuming, that the action of the vessels of nutrition has become modified

by the condition of the fluid circulating in them; and that this fluid has had its condition changed by the reception into it of the variolous matter. Still, although we admit this, there is much to be explained, both as regards the exanthematous fevers, and those that are unaccompanied by cutaneous affections. In the case assumed above, the smallpox taint must evidently have been received into the blood, and, by the action of this fluid on the capillaries, and on the nerves distributed to them, the exanthematous fever resulted. In other cases, the capillaries, and the nerves connected with them, may be first morbidly impressed, and, successively, the condition of the circulating fluid may be modified. Of this we have examples in all the active hyperæmiæ, and in every febrile irritation, which is the consequence of derangement in any portion of the capillary system of vessels. In one or other of these modes, all fevers—miasmatic or common—are probably induced.”

But the most marked difference between fevers and inflammations has been exhibited by M. Andral, and since him by others, in their researches on the blood. Whilst in the latter, two morbid changes—of a solid and of the blood—always proceed together; in the former, the only phenomenon which is never wanting is the fever itself. There is neither in the solids nor in the blood any constant alteration that can account for it. On this subject, the observations of M. Andral are replete with interest. He found, when fever was devoid of every inflammatory complication, the quantity of fibrin in no case augmented; that it frequently remained in the healthy proportion; and, at times, diminished to a degree not met with in any other acute disease. Neither the pustules of variola nor the dothinerteric patches of typhoid fever had the power of augmenting its proportion. The alteration of the blood in fevers, which consists in a diminution of the fibrinous element is, consequently, the reverse of that which occurs in inflammation.

The diminution of fibrin, whenever it exists, is found to induce remarkable modifications in the physical characters of the blood. No matter what may be the pyrexia in which it is present, blood, drawn from a vein, presents according to M. Andral, the following characters. The serum and clot are imperfectly separated, whence it follows that there seems to be a smaller proportion of the former. The clot is bulky; often fills the whole width of the vessel into which it has been received, and is never raised at the edge, as is commonly the case in inflammation. Its consistence is always slight; it tears and breaks with the greatest facility; and, in some cases, the slightest pressure reduces it to a state of fluidity, (*diffluence*.) It then no longer forms one mass, but divides into a multitude of clots, which mix with the serum and colour it of a more or less deep red. This constitutes the state of “dissolution of the blood” described by the ancients, which is owing to a diminution in the amount of the spontaneously coagulable portion, and causes the great size of the clot, which is in an inverse ratio to its density, owing to the serum not being forced out from it. The great proportion of the globules is, however, a main cause of the considerable size of the clot. This is

especially the case in the earlier periods of the disease. The globules do not diminish like the fibrin; on the contrary, they may be remarkable for their abundance. M. Andral has very often been struck with the large proportion of globules in persons labouring under severe typhoid fever. At one time, he was disposed to regard this superabundance of globules as one of the characters of the blood in fever; but farther observation convinced him, that if this predominance of red globules be frequently found in typhoid fever, it is owing to the fact, that this fever very frequently attacks individuals, who, owing to age and constitution, are more or less plethoric; but the superabundance of globules is so little connected with typhoid fever, that the disease may and does occur in chlorotic girls, whose blood is poor in globules. Whether, however, the globules be abundant or the contrary, the influence of the disease on the fibrin appears to be the same.

Another very important negative quality distinguishes the blood of fever from that of inflammation. This is the absence of the buffy coat. Unless there was some inflammatory complication, M. Andral never once observed it in inflammatory fever, slight or severe typhoid fever, measles, scarlatina, or small-pox. In the last disease, indeed, when the eruption was very confluent, and, especially when collections of pus existed beneath the skin or in some organ, a buffy coat was observed at the surface of the clot; but this buff always appeared to him to present a peculiar appearance. Instead of being firm and consistent, like the ordinary buffy coat in the phlegmasiæ, it was very soft, gelatinous as it were; and whatever thickness it might seem to have in the first instance, it could be rapidly transformed into a thinnish pellicle, by pressing out the large quantity of serum which it contained. The cause of this absence of the buffy coat in fever is, that there is never, except when some inflammatory complication exists, an increase in the proportion of fibrin to that of the red globules. It is always either of the healthy quantity, or less.

The changes observed in the blood, in certain fevers, as in the yellow fever of the West Indies—it has been maintained, by Dr. Stevens—are the cause of these diseases; but the same remarks that were made on the local seat of fever are applicable here. The changes in question may supervene in the course of the affection, and be rather the results of the febrile condition. In different inflammations, marked changes are perceptible in the character of the circulating fluid, yet few consider them to be the first link in the febrile chain. It is not improbable, that the cause which gives rise to fevers, acts upon the circulating fluid in such a manner as to tend to destroy its spontaneously coagulable matter, the fibrin; whilst the cause that induces the phlegmasiæ tends, on the contrary, to create a fresh quantity of this matter. M. Andral thinks this is incontestable from his researches. "In all these cases," he remarks, "there is, in my view, a true poisoning (*intoxication*). If it be slight, its effect on the blood must doubtless exist, but it may be inappreciable; if the poisoning be stronger, the effect, which it induces in the blood, becomes manifest, and is marked by diminution of the fibrin."

It is impossible to fix, with anything like precision, as has been attempted by Dr. Southwood Smith, the exact sequence of the disorders of innervation, circulation, and secretion as they manifest themselves in fever. Generally, some signs exist, which are more especially referable to the first of these, such as languor, lassitude, and the *malaise*, that immediately precedes and accompanies the rigor or chill, where such exists; but if we were to examine closely, and with full understanding, we might discover some derangement about the circulatory and secretory organs,—some variation in the strength or frequency of the heart's action, or in the tension of the arteries; or some appearances about the mucous membrane investing the tongue; unusual dryness of skin, and modification in the state of the fluid secretions. We certainly are justified in affirming, that all these functions are more or less modified in every case of protracted fever; but we may still remain in doubt as to which first becomes materially deranged.

The mortality from fever is everywhere considerable, yet it varies materially in different countries. Thus, according to Dr. Graves, it amounts in Leinster, Ireland, to a fraction less than one-tenth of the whole mortality; whilst, in London, the deaths do not amount to more than one-fiftieth of the whole number. It would appear, too, that in Dublin, the deaths from fever were twice as numerous as in London; although the ratio of the population of the latter was to the former, as a million and a half, to three hundred and sixty-two thousand. The following table has been recently given by Alex. Watt, LL. D., of Glasgow, as “the comparative mortality from fever in Edinburgh and Glasgow, and from fevers, exclusive of puerperal and scarlet fevers, in New York and Philadelphia.”

	Edinburgh.	Glasgow.	New York.	Philadelphia.
Deaths under 5 years to the whole deaths by fever, . . .	12.41	12.07	15.67	17.34
Do. under 20 years, . . . . .	29.74	29.05	30.22	33.03
Do. 20 and upwards, . . . . .	70.25	70.94	69.77	66.96

The per-centage for New York was deduced from 1416 cases; that of Philadelphia from 663.

The classification of fevers has been various. By those who admit the division of febrile affections into *idiopathic* and *symptomatic*,—or into such as are not induced by any known local affection, and such as are secondary—and who have attempted to range every febrile disease under one or other of these heads,—the latter class has been multiplied, in many cases, almost *ad infinitum*. Hence, the numerous divisions of fever contained in the works of the German and French pathologists more especially.

The primary fevers, which are those to be considered here, may be divided, for convenience of study, into five great classes;—the *intermittent*, the *remittent*, the *continued*, the *eruptive*, and the *arthritic*, each of which will demand a separate investigation.

## SECTION I.

## INTERMITTENT FEVER.

SYNON. *Febris intermittens*, *Dialeipyra*, *Anetus*, *Intermittens*, *Ague*, *Ague and Fever*; *Fr.* *Fièvre intermittente*, *F. d'accès*, *F. des marais*, *F. périodique*; *Ger.* *Wechselfieber*, *Kalte Fieber*, *Aussetzende Fieber*.

An intermittent, being the most simple form of fever, falls judiciously, perhaps, under consideration first. It consists, in its simple state, of three distinct stages,—a cold stage, followed by a hot, and this, again, by a sweating stage: the morbid phenomena then wholly, or mainly, disappear, to be reproduced at an interval not always the same. The three stages constitute a *paroxysm* or *fit*; and the interval, between the cessation of one paroxysm and the commencement of the next, is termed the *apyrexia* or *intermission*. The different periods at which they recur, constitute the *type* of the intermittent. When the paroxysms return every day, the intermittent is *quotidian*; if every other day, *tertian*; if the interval be a day longer, *quartan*; and these are the chief types observed. The *double quotidian* has two paroxysms in the day; the first corresponding with the first on the following day, and the second with the second. The *double tertian* has daily paroxysms,—the paroxysms of each day corresponding with others forty-eight hours afterwards. *Double quartans* are sometimes seen, which have a paroxysm on two consecutive days, and an intermission on the third. If a tertian have two paroxysms every other day, and one only on the intercalary day, the fever is said to be *triple*. If there be two paroxysms a day, obeying the laws of the tertian type, the fever is said to be a *quadruple tertian*. In like manner, *double* and *triple quodidians* have been admitted; and authors have gone so far in their divisions as to admit *quintan*, *sextan*, *hebdomadal*, *octan*, *nonan*, *mensual*, *bimensual*, *trimensual*, and even *annual* intermittents! It is scarcely necessary to say, that the evidence of such connexion between the paroxysms, as authorizes their being regarded as a part of the same disease, must be extremely loose, and unsatisfactory, and that, perhaps, in all,—certainly, we think, in the annual intermittents,—the *morbid anniversarii*—there must have been a fresh exposure to the exciting cause, and a fresh production of a disease similar to its precursor, but not identical with it.

Various epithets have been applied to intermittents, some of which are used in the medical language of the day, and, therefore, require explanation. If the paroxysms of an intermittent have nothing fixed in their periods of recurrence, they are said to be *irregular* or *erratic*; if they exhibit anything unusual in their stages, they are termed *anomalous*: for example, should one or more of the paroxysms be wanting, or their order be modified;—and should the stages of the paroxysm be wholly wanting, and in their place some other morbid phenomenon present itself, which recurs according to a particular type, the fever is said to be “masked,”—constituting the *febris intermittens larvata* of authors, and the *masked* or *dumb ague* of the unprofessional. Again, if the paroxysms of the double quotidian or tertian, or of the triple

quartan, approach each other so closely, that one begins before its precursor terminates, the fever is said to be *subintrant*; if the succeeding paroxysm come on before its usual hour, the disease is said to be *anticipating*; and, on the other hand, if it do not appear until later than usual, it is said to be a *postponing* quotidian, tertian, &c., as the case may be.

**Diagnosis.**—Before the cold stage of a paroxysm of an intermittent sets in, the patient is usually warned of its approach by a series of prodromic or premonitory symptoms. These usually consist in more or less general indisposition, lassitude, pains in the joints or limbs, blueness of the nails, and uneasy sensations in the extreme parts of the body—*acrodynia*. They do not usually exist long before the symptoms of—

1. The *cold stage* present themselves. At first, a sensation of cold is experienced, which may be accompanied, or not, with shivering or rigors. It may be general, or, first of all, limited to the hands or feet; or a sensation may be experienced as if cold water were trickling down the back. The skin becomes pale, yellowish, or purple in spots; and when the sense of cold is excessive, there is the *cutis anserina*, *chair de poule* or *gooseskin*, produced by the prominence of the bulbs of the hair, owing to the recession of the fluid from the cutaneous surface surrounding them. The attitude of the patient is similar to that assumed when suffering from ordinary cold. He lies or sits, as it were, in a heap, crowded upon himself, the limbs and jaws shaking, and the teeth chattering; the voice is enfeebled and tremulous; the respiration embarrassed; the pulse small; and the sensible perspiration suspended: the skin feels cold to the observer, but still the coldness is by no means proportionate to the sensations of the patient; at times, indeed, when he is suffering intensely, there may seem, to the hand of the practitioner, to be but a slight diminution of temperature. The general temperature of the body is usually but little affected, and the author has noted it, occasionally, under the tongue, somewhat above the natural standard. The urinary secretion differs materially in the different stages; in this stage, it is commonly clear and copious. There is frequently, also, more or less derangement of stomach, nausea, or vomiting; and, occasionally, considerable pain is experienced in the region of that viscus.

The duration of the cold stage is very various: at times, it lasts only a few minutes; at others, half an hour or an hour; and, in rare cases, it may continue for four or five hours. In the very worst forms, indeed, of pernicious intermittents, to which the name *febres algidæ* has been given by many writers, the reaction is never re-established, and the patient dies in this, the first stage or *stadium* of the paroxysm. To the stage of cold or of *concentration*—as it has been termed—succeeds,—

2. The *hot stage* or *stage of expansion*; the phenomena of the cold stage appearing to take place from the circumference towards the centre of the organism, whilst those of the hot stage, to use the language of M. Dubois d'Amiens, commence within, and *expand* themselves, as it were, towards the circumference. The heat commences

at the epigastrium, whence it spreads to the head and the extremities. The phenomena of the cold stage gradually disappear; the skin, from being pale, becomes flushed; the thirst is great; the pulse developed, and augmented in frequency; the breathing free, but hurried, as in other forms of fever; the mouth dry and clammy; the breath and skin hot; and the urine high-coloured. The degree of heat or of the sensation of heat is very variable. At times, it is merely agreeable; but, at others, it is so insupportable as to induce great restlessness, and change of position, in order that the body may be placed in contact with a cool surface. In this stage, the epigastric uneasiness commonly yields to cephalalgia, which is occasionally intense.

3. The sweating stage or stage of *termination* succeeds. The sweating commonly begins about the head, and afterwards on the upper part of the chest, the back, and the inner part of the thighs; and soon becomes general. Its amount is various. At times, it constitutes merely a gentle moisture, whilst, at others, it is so profuse as to soak the body linen, and even the bed. Its smell is sour, or sweetish, according to Dr. Stark, like that of fresh-baked brown bread. The moment the sweating stage becomes established, marked relief is experienced: the pains disappear; the uneasy feelings of every kind are mitigated; the increased heat subsides; the pulse becomes full and free; and the urine may deposit a lateritious or brick-dust sediment. This was formerly an acknowledged characteristic, but investigations have shown, that it is by no means an invariable occurrence. The sediment formed in intermittent fevers, according to M. Simon, is always composed of uric acid and urate of ammonia, in most cases combined with red colouring matter—*uroerythrin*. M. L'Heritier found the density and mean composition of the urine in the different stages, as deduced from the analysis of the urinary secretion of twelve patients, to be as follows:

	Cold Stage.	Hot Stage.	Sweating Stage.
Specific gravity, . . . . .	1017.330	1020.304	1022.820
Water, . . . . .	967.520	964.680	961.845
Solid constituents, . . . . .	32.480	35.320	38.155
Urea, . . . . .	9.845	9.015	7.624
Uric acid, . . . . .	0.660	0.980	1.029
Salts and organic matter, . . . . .	21.975	25.325	29.502

In all these cases, the physical characters of the secretion were affected by the disease; in six others, the urine remained apparently normal.

The sweating stage does not usually continue longer than three or four hours.

Such are the stages which are generally considered to constitute a paroxysm of an intermittent. Dr. Billing, however, says there is no third stage,—the sweat, which succeeds the hot stage being “nothing but an indication of renewed secretion by the capillaries; which, after having lost their tone, and been consequently in a relaxed, distended, non-secreting state, renew their secretion on being restored to a normal condition.” After the paroxysm, the patient feels entirely restored, with the exception of a sensation of fatigue or debility. The stage of apyrexia or intermission now commences, during which all

the morbid phenomena cease, or excite so little attention, that the patient regards himself well. Still, unless cured, he has the disease within him, and must be considered to labour under intermittent fever, until the tendency to periodical recurrence has been obliterated.

The period of the day at which the paroxysms of the different types of intermittents occur, is by no means the same. In the quotidian, for example, they generally appear in the morning; in the tertian, about noon; and in the quartan, after dinner. So commonly, indeed, are these periods regularly observed, that they have been made to enter into the definition of the different forms. The same may be said of the duration of the paroxysms, which in the quotidian, is usually under eighteen hours; in the tertian under twelve; and in the quartan, under nine. In the quotidian, the cold stage is usually short; and in the quartan, long. The tertian holds the medium place in this respect. It is, moreover, the most manageable form; and the quartan the least so.

Observation of the blood in intermittents has not led to any satisfactory information. The analyses made by MM. Andral and Gavarret would appear to show, that it exhibits rather a tendency to hyperinosis, or increase of the fibrinous element. It was in most cases, however, taken from persons suffering from long-standing tertian or quotidian fever, and when inflammatory complications may have existed. It did not seem, that the period at which the blood was taken, whether during the remission, the hot, or the cold stage, exerted any influence on the composition of the fluid.

The duration of the disease is unlimited. At times it terminates in the course of a few days; whilst, at others, it continues for months, and even years; but, if properly managed, it may almost always be cured by appropriate treatment. So much is this the case, that in some of the aguish districts of this country, in which simple intermittent prevails, the disease is commonly treated without the assistance of the physician; and the circumstance of an individual, summoned on a jury, having intermittent, is not always considered a sufficient reason why he should be excused from attending. If, however, the disease be permitted to go on, or if it recur repeatedly, the functions of hæmatisation and nutrition always suffer; the complexion becomes sallow; the different organic actions are imperfectly accomplished; the spleen, and, at times, the liver, becomes hypertrophied, so as to form the tumours that are known, in aguish districts, under the name of *ague-cakes* (see vol. ii. p. 105); the limbs become œdematous; and the nutrition of the body falls off. It has, indeed, appeared to the author, that, in all cases of intermittents, which have recurred for a few times, the spleen is more or less engorged so as to be felt distinctly beneath the false ribs, and that more or less effusion is perceptible, if careful pressure be made on the instep. Yet these consequences or concomitants of the intermittent disappear with the disease. The former—as elsewhere remarked—encourages the idea, that the spleen may serve as a diverticulum for the blood during the cold stage; and the latter indicates, that under the disturbance of the circulatory functions, during the paroxysm, there is a loss of balance between those vessels whose office it is to deposit and those whose office it is to take



up, so that the action of the former preponderates. The dropsy or œdema is, in other words, the results of functional derangement, and, therefore, one of the most manageable forms of hydropic disease. Where the enlargement of the spleen or liver is to such an extent as to interfere with the ready circulation of blood through those viscera, a dropsy of another form may arise from mechanical hyperæmia, which is of a more serious nature than the first mentioned, and the prognosis of which merges in that of the organic affection on which it is dependent. The dropsy, here again, is but secondary or a symptom, as it perhaps always is.

It fortunately happens, that our intermittents are, generally, of the simple character described above; but, in some countries, and in certain parts of the United States, and occasionally in districts, where simple intermittents prevail almost exclusively, a rapidly fatal form of the disease is seen, which destroys in the first paroxysms, if the physician should not succeed in arresting it. To this form of intermittent, the epithet *pernicious* or *congestive* has been applied by many—indeed by most—writers. The chief functional phenomena, by which it is characterized, are—a greater degree of severity of all the symptoms,—generally, a much longer cold stage, and feebleness of reaction in the second stage; with symptoms denoting a serious implication of important organs;—for example, loss of sensation and motion; involuntary discharges from the bladder and bowels; great change in the facial expression; prostration; languid, scarcely perceptible, circulation; and more or less irregularity of the heart's action. At each subsequent paroxysm, these alarming symptoms augment; and the apyrexia, instead of being one of comparative health, is imperfect, and attended with languor, stupor, and other signs of serious indisposition. In the paroxysms of these pernicious intermittents, there is usually some concentration of the vital activity, or enfeebled action, giving rise to hyperæmia in some internal organ; and those nosologists, who are fond of subdivisions, that may include every variety of diseased action, have assigned different names for them; hence, we read of *choleric*, *dysenteric*, *hepatic*, *cardialgic*, *peripneumonic*, *pleuritic*, *nephritic*, and *cephalalgic* pernicious intermittents, according as they are accompanied by cholera morbus, dysentery, liver disease, pain in the stomach, peripneumonia, pleurisy, nephritis, or headache: at other times, they are designated from some predominant functional phenomenon,—as the *diaphoretic*, *algid*, &c. It is obvious, however, that all these distinctions are arbitrary, and that they might be extended indefinitely. They are unnecessary, and might, with as much propriety, be applied to the simple, as to the pernicious intermittent.

**Causes.**—It would appear, that every age is liable to intermittents, but not in an equal degree. In highly aguish districts, we observe young infants, even whilst at the breast, suffering under it; but it is less common at this age than perhaps at any other. The author had recently a case under his charge, of a child, ten months old, in which the disease yielded to the usual antiperiodic treatment. The mother suffered at the same time, and was also cured. Both had been exposed to the morbid exhalations from one of our malarious rivers.

The disease is seen more frequently amongst males than females, because the former, from their out-door labours, are more exposed to the exciting cause; but where both sexes are equally exposed, the female is attacked at least as frequently as the male. It is met with in all climates, but less perniciously, perhaps, in the colder regions of the globe, than in the torrid, or the temperate. In the same region, too, it prevails more virulently in some districts than in others. When its grand exciting cause, malaria, is treated of, it will be shown, that there is something extremely capricious in the mode in which it exerts its morbid agency; sometimes exhibiting itself on the high grounds, whilst the low are exempt; and occasionally visiting tracts of country, where it had been previously unknown; whilst, on the other hand, it may leave localities, where it had been before an annual visiter.

Season, unquestionably, exerts an influence, and this mainly by its effect upon the soil or locality, that gives rise to the exhalations which are its grand exciting cause. The latter end of summer and the autumn are, in this country, the seasons during which the disease generally prevails. It is also, occasionally, seen in spring; but is commonly so mild at this season, as to have given rise to the old saying, that,—

An ague in the spring,  
Is physic for a king.

It was supposed, to act as “physic,” by expelling morbid matters, which, without its intervention, might have been the source of more serious mischief.

The great exciting cause of intermittents is, doubtless, some emanation, of whose nature we know nothing, which, under favouring circumstances, is exhaled from certain localities, and not from others. The localities in which its effects are most observed, are so generally marshy, that the name *Marsh poison* or *marshy miasm* has been given to it. It does, undoubtedly, arise, however, in districts that are by no means paludal; and hence the Italian term *Malaria*, which like *Aria cattiva* merely means “bad air,” is preferable, and is generally adopted, not, however, exclusively—for there is, doubtless, a malaria or bad air concerned in the production of other diseases that are endemic—as goitre, beriberi, pellagra, &c. &c. Nor can this fact be lost sight of in our investigations into the nature of those emanations that give rise to intermittent fever.

The reason of the inference, that where intermittents prevail, there is something peculiar in the geology of the district, is, that in one country or district in close proximity with another, intermittents may exist to a great extent in the former; whilst in the latter they may be wholly unknown. Districts, indeed, similar to those which in certain regions are known to disengage the marshy miasm in great abundance, may, in other regions, be perfectly salubrious. It is not every marsh that exhales the fitful pest. In the eastern parts of this country, many marshes exist, where agues are unknown; and, again, malarious diseases prevail in fearful intensity, in the most pernicious form, where there is no such thing as a marsh within many miles. Such is

the case with the Maremma district in Italy, which extends from Leghorn to Terracina.\* The common idea is, that malaria is the product of vegetable decomposition; others, however, have added animal decomposition; others have ascribed it to animalcules; others to animalcular decomposition; whilst the author's friend, Professor J. K. Mitchell, is disposed to refer it to cryptogamic productions. These various hypotheses sufficiently exhibit the obscurity of the subject. Vegetable decomposition has been more constantly invoked, inasmuch as vegetable matter is almost everywhere to be met with; yet the evidence in favour of it appears to the author to be every day more and more unsatisfactory. Vegetable decomposition, it will be admitted, does not give occasion to it everywhere, for there are numerous fertile districts in which intermittents are wholly unknown. There must, consequently, be something in addition to it, if we admit that it exerts any agency; and it is worthy of remark, that in the "*Local Reports on the sanitary condition of the labouring population of England, in consequence of an inquiry directed to be made by the poor law commissioners,*" presented to both houses of Parliament, July 1842, although numerous medical reporters ascribe the origin of typhus to animal or vegetable decomposition or to both combined, the author does not find, that one of them refers intermittent to this cause, except in situations known to be malarious, or, in other words, where intermittent had previously prevailed. (See TYPHUS.) The main facts on record indicate, that where a locality is already malarious, as proved by the existence of malarious disease—for we have no other proof of it—there are certain physical conditions which may give rise to a greater disengagement of it. The steeping of hemp has generally been esteemed an unhealthy process,—and so it is where the locality is malarious, yet there are numerous examples to show, that the process is not unhealthy in districts where these diseases do not prevail. At the foot of the southwestern range of mountains in Virginia, a friend of the author cultivates hemp largely, yet no such effects as those represented are caused by it. In many parts of that salubrious district, intermittents are wholly unknown; yet, at a few miles distance, they prevail annually. Can it be, that there is vegetable decomposition in one case and not in the other? Marshes and millponds may exist, yet the locality may be free from disease. The inhabitants of a malarious region, who have never lived in one that is not so, can neither readily comprehend nor credit this, but the fact is undoubted. A modern English writer, Dr. Carbutt, has adduced an example of what we often meet with both in this and other countries. It strikingly exhibits how little we know of the terrestrial conditions that generate the malaria which produces intermittent and other diseases. "I have to remark to you," he observes, "that in the memory of the oldest medical practitioner living, and as far back as tradition can reach, there never was an ague caught in Manchester, nor within a considerable number of miles of it.

\* For interesting contributions to the history of malaria,—see a letter to the author from Dr. Whittle of the United States' Navy; another from T. R. Peale, Esq., Zoologist to the Exploring Expedition; a third from Dr. R. S. Holmes, of the United States' Army, to Dr. James R. Speer, of Pittsburg, in the *Medical Examiner*, for November 25, 1843; and a fourth from the same gentleman to the author, in *Medical Examiner*, for March 1845, p. 144.

This fact is rather remarkable, as you know we lie upon four rivers, and one or two considerable brooks, besides being surrounded and traversed by canals innumerable. But, do we never see this ague, then, in Manchester? O, yes; we see plenty of it. The poor Irish, who go in the autumn of the year to assist at the harvest in Holderness, Lincolnshire, Cambridgeshire, Essex, and other places, come, many of them, to winter in Manchester, and the first east wind that blows in February or March, brings out the first paroxysm of that ague, which they had caught in the autumn, but which had lain undeveloped, and unsuspected, in the system until aroused by such weather as we generally have in February and March."

The author has canvassed elsewhere, (*Human Health*, p. 68, Philada. 1844,) and at considerable length, the question as to the origin of the malaria, that gives rise to intermittent fever especially; and every fact and argument, which he has since seen, confirm him more and more in the conclusion there drawn,—“that a great and ever-acting cause of the difference of salubrity in countries is seated in the locality,—that is, in the soil that forms them, and in the air that circulates above them; and although we may be able to modify the condition of the former, and improve the circulation of the latter, we can rarely succeed in annihilating either of those influences.”

It is proper to remark, that such a change occasionally occurs in a malarious region, as to render it entirely healthy, and this without our being able to assign any plausible conjecture for the alteration. At times, too, after having left one of its former haunts, the malaria may return, after the lapse of a longer or shorter period. Not many years ago, the villas on the banks of the Delaware were almost uninhabitable in the latter end of summer, and in the autumnal months; but they are now healthy, whilst those on the verdant and sylvan banks of the Schuylkill suffer from malarious emanations; a fact, which of itself would be fatal to the hypothesis, recently broached by Dr. Robert Willis, that marsh miasm, and malaria, are nothing more than “moist warm air,—air excessively moist, considered in connexion with its own temperature, and the temperature of the human body”! In all cases, in which these emanations are given off, it would seem to be necessary that there should have been a certain amount of moisture present, which has been evaporated by the solar heat from the malarious soil; hence it is, that the deltas and estuaries of rivers, swamps, and the shores of the sea and rivers, offer situations which are favourable to their disengagement. It has, indeed, been affirmed by Dr. Ferguson, that there seems to be one only condition indispensable to the production of the malaria or marsh poison on all surfaces *capable* of absorption, and that is,—the paucity of water where it has previously and recently abounded. “To this,” Dr. Ferguson remarks, “there is no exception in climates of high temperature, and from thence we may justly infer, that the poison is produced at a highly advanced stage of the drying process;” and he properly adds, that “in the present state of our knowledge, we can no more tell what that precise stage may be, or what that poison actually is, the development of which must be ever varying, according to circumstance of tempera-

ture, moisture, elevation, perfusion, aspect, texture and depth of soil, than we can define and describe those vapours that generate typhus fever, smallpox, and other diseases." But, even in climates of high temperature, the circumstances, detailed by Dr. Ferguson, are not sufficient of themselves, to give rise to the malaria that induces intermittent fever, inasmuch as there are many places apparently favourable to its generation, in which intermittents are unknown. The soil must itself be malarious, and then, under favourable circumstances, the morbid emanations may be abundantly exhaled.

But if unacquainted with the physical character of the marsh poison, notwithstanding the researches of many excellent chemical analysts, we know certain of the laws by which it is governed. Although of greater specific gravity than air, it appears to be carried up during the day, along with aqueous vapour, which is lighter than air in the ratio of 625 to 1000, and during the night is deposited. It is in greatest concentration near the surface of the earth, and hence the inhabitants of the ground floor of any habitation are more exposed to its agency than those who occupy the upper stories, and, accordingly, in order to insure, as far as practicable, the salubrity of dwellings in malarious soils, they should be raised on arches, or the lower story be suffered to remain wholly uninhabited. It can likewise be comprehended how a high wall or barricade, placed between a soil exhaling malaria and one that is not, may protect the dwellers on the latter from disease, by fencing in the emanations, and preventing them from being wafted along the surface by winds; and how the intervention of woods may serve as a protecting screen. It has been suggested, that this may have been a reason, why the ancients consecrated the woods, in the vicinity of Rome, to Neptune, in order to secure them from the axe. In the distresses, however, in which the great expenditure of Pius VI. involved the Holy See, a large district of these woods was sold and cut, and an increase of danger, according to Sir Charles Morgan, was thus caused to the unprotected city. The same circumstances account for the well-known fact, that whilst the inhabitants of a plain, on the level of a locality, which is exhaling malaria, may escape intermittent fever, those dwelling on neighbouring elevations may suffer extensively. A recent writer—Dr. Shapter—remarks, "It is not a little singular, that during the years 1800–1802, when intermittent fever prevailed in England, while the inhabitants of the high grounds were harassed by this fever in its worst forms, those of the subjacent valleys were not affected by it." The explanation of this is, that when the heavier malaria is taken up along with watery vapour, under favourable circumstances it is wafted onwards, and may be deposited on elevations under the lee of the malarious soil; but if the atmospheric circumstances should be such, that the malaria, as it escapes, is wafted along the surface, then the inhabitants of places on a level with the source of the emanation may be affected with malarious disease rather than those on the elevations. In this country, where there are so many and such extensive surfaces exhaling this poison, these facts are frequently noticed.

The health of a locality is, likewise, often connected with the winds that prevail during the latter part of summer and autumn. In

this country, they are chiefly from the southward, or have, what the sailors term, *southing* in them. These winds are warm, and, when from the east, are moist at the same time. Inhabitants of the northern shores of our rivers that exhale malaria, or to the northward of any malarious locality, may, therefore, be expected to suffer more than those to the south of those localities; and such is, *cæteris paribus*, the fact.

The researches of Professor Daniell, of King's College, London, showed, that water obtained from certain unhealthy localities on the coast of Africa, where pernicious intermittent and remittent fevers prevail, contains free sulphuretted hydrogen; and a similar view as the result of experiment on the air of malarious regions was maintained by Dr. Daniel P. Gardner; but this alone—supposing it to be the fact—would be obviously inadequate to account for the insalubrity; inasmuch as in situations in which sulphuretted hydrogen is known to prevail to a much greater extent, these fevers are often wholly unknown; and, moreover, the view has been disproved by Dr. McWilliam, the senior medical officer in the disastrous expedition to the Niger during the years 1841–2, who—as well as Dr. Morris Pritchett—shows most satisfactorily, that no such gas as free sulphuretted hydrogen is found in the Niger, and that what was detected in the specimens sent to England, and examined by Professor Daniell, originated from the decomposition of the contents of the bottles: yet, on the slender evidence afforded by such examination, Professor Daniell inferred, that no vessel should be allowed to cast anchor or linger in sulphuretted waters. “But if paramount duty,” he adds, “should oppose itself to such a course, we have a certain remedy to propose. You have seen how instantly chlorine destroys the gas. Chlorine and sulphuretted hydrogen cannot coexist together. Plentiful fumigations of chlorine would therefore infallibly prevent the deleterious effects; and the antidote is at once cheap, and incapable, under proper management, to produce any injurious effects to counterbalance its advantages.” Yet, although ships were liberally provided with means for disengaging chlorine, lamentable experience destroyed at once the hypothesis of Professor Daniell as to the nature of the pestiferous emanations, and the means for destroying them. The whole case has, indeed, taught a useful lesson, and may prevent too hasty deductions from chemical facts, without adequate inquiry into the circumstances that may be engaged in their production.

The above are some of the main circumstances connected with malaria as an exciting cause of intermittent fever. For farther particulars, the author may refer to his work already cited.

It was remarked, that malarious emanations are, doubtless, the great exciting cause of intermittents. By many, they are regarded as the sole cause; and it is questionable, whether a true intermittent fever be ever produced, without, at least, some predisposition derived from locality; otherwise it would be difficult to account for the entire exemption of numerous localities from the disease, no matter what may have been the influences to which, in other respects, the inhabitants were exposed. Certainly, if intermittent fever ever does

occur apart from malarious influence, the case must be rare; nor has the author ever had the slightest reason for entertaining the belief, that the disease is communicable from one person to another by contagion, as has been presumed by some. It is, indeed, in all strictness, entitled to the appellation of an endemic.

**Pathological Characters.**—Pathological investigations throw no light whatever on the essence of intermittent fever. An eminent pathologist, M. Bailly, visited Rome for the express purpose of determining, if practicable, the nature and seat of the disease; but although his opportunities were numerous, and his zeal and attention unbounded,—from the very nature of the case, they were without any determinate results. Their value was negative rather than positive. In 33 necroscopies, he found more or less disease of the brain; in 22 of these, there was thickening and other marks of inflammation of the arachnoid; and in 11, inflammation of the substance of the brain. Gastro-enteritis was observed in 20 cases. In 4, gastritis existed alone; and in 4, enteritis alone. In 11, the spleen was softened; in some instances enlarged: one weighed from two to three pounds, and another from eight to ten pounds. In two cases, the spleen was hypertrophied and indurated. In three, it was ruptured, and in one, it was gorged with blood. In two cases, the liver was softened; in four, gorged with blood; and, in one case, the gall-bladder was inflamed. In two cases, there was pericarditis; in three, peritonitis; in one, pneumonitis, and, in one case, there was inflammation and enlargement of the parotid. It is obvious, that these appearances throw no light on the pathology of the disease. All might, indeed, with as much propriety, be esteemed secondary, and occurring in the course of the malady. They certainly do not establish the view of MM. Audouard and Piorry, that the seat of intermittents is the spleen, or the one so generally embraced some years ago, by the followers of a celebrated systematist, who maintained, that intermittents are but gastro-enteritis. “Every regular paroxysm of an intermittent,” said Broussais, “is the sign of a gastro-enteritis, the irritation of which is afterwards transferred to the cutaneous exhalents, which produces the crisis.” This, it need scarcely be said, is nothing more than an assertion, and an assertion destitute of any sufficient foundation. There is, in reality, no resemblance between a paroxysm of intermittent fever, and an attack of gastro-enteritis, either in the symptoms, causes, or treatment.

The believers in the local origin of fever are embarrassed to account for the phenomena of intermittents. M. Rostan—who declares, in the most positive manner, that a fever without local seat cannot exist—thus expresses himself of that now under consideration:—“After the death of patients, various organic lesions are observed, which cannot, however, be regarded as the cause of the intermittent phenomena, unless, as M. Rayer has well remarked, we suppose that intermittent fever is by turns a gastritis, an enteritis, a carditis, an encephalitis, &c., which is absurd. The true organic cause of the intermittence is unknown. We are of opinion, that it is primarily seated in the fluids, in the blood, and that from thence it influences, in a special manner, the nervous

system. For some years past, sophisms and explanations have been adduced in multitude to prove, that the type of intermittent fevers is but an accessory phenomenon of slight importance; that these fevers, like the continued, are but symptomatic of local phlegmasia occurring under a peculiar form. It is not without disgust, that we peruse these verbose collections of paradoxes, dictated by the spirit of party, by self-love and bad faith. Feeble in reasoning, as we presume the partisans of similar doctrines to be;—ready as they may be to feel satisfied with their own explanations, we cannot suppose them stupid enough to be satisfied with such miserable suppositions. And is it not better, —indeed, a hundred times more noble,—to candidly acknowledge our ignorance, and to confess that we do not comprehend the cause of this singular phenomenon, than to desire to impose on ourselves and on others by the most ridiculous explanations? We do not know what is the organic cause of periodicity or intermittence; it is not solely a form of irritation; irritation is not the principal phenomenon; it ought not to form the basis of our therapeutics; the appearances, which present themselves after death, are not the cause of the intermittence. The type of simple inflammation is continued; and when the type is intermittent, there is something more than inflammation; the latter ceases to be simple and does not form the principal circumstance of the disease. When inflammation is found after the death of the patient, this inflammation can only be accessory; since, in ordinary cases, its progress is continued, and, in the majority of cases, intermittence takes place without it. The intermittent type is the principal phenomenon of these diseases, as upon it is founded the most heroic treatment that medicine possesses, and before which the pride of the pretended physiological medicine must bow. It is certain, however, that intermittent fevers almost uniformly exhibit themselves with some predominant functional expression. Hence, the genera adopted by the illustrious Pinel; hence the proofs that have been adduced in support of the existence of a phlegmasia in these kinds of fevers. But pathological anatomy is far from having sufficiently elucidated this point of doctrine, and even if we were to admit, that some organic lesion had constantly been found, it would always remain for us to determine why it should always give rise to intermittent phenomena.”

The nature of the morbid action in a paroxysm of intermittent fever is unknown to us. The first link in the chain of phenomena is probably connected with the nervous system, whose functions are strangely and inexplicably modified by the action of the great exciting cause—malaria; this is probably received into the system along with the air in inspiration; and, in a latent manner, exerts its agency for a time, before the explosion takes place. Under this modified condition of the nervous system, the action of the capillaries is morbidly impressed; a state similar to that of the internal congestion, which occurs in certain fevers, is produced; and continues for a time, until reaction is established; and the concentration of vital manifestations is turned towards the surface: this again subsides, and the functions of the skin, which had been interfered with in the cold and the hot stages, are now restored, and the cutaneous secretions are poured out in increased quantity to



compensate for the previous deficiency. The apyrexia succeeds to the turmoil, and all remains tranquil; until, in process of time, similar scenes are enacted. As to the laws that govern the periodical recurrence of agues, it may be well to admit at once our entire ignorance. We know nothing of the causes of that periodicity, which is observed in the action of various organs in health, any more than of those, which constitute the essence of various periodical diseases. There is probably a periodical movement within us at different periods of the day, which corresponds with the same period in other days, and gives rise to the exacerbations that we notice in hectic and other fevers. A marked case of this periodicity is seen in the recurrence of the catamenia; yet, although many views have been promulgated in regard to it, we are as much in the dark as were our ancestors.

**Treatment.**—The management of intermittent fever resolves itself into that which is proper in the paroxysm, and that which is required to prevent its recurrence.

1. *During the paroxysm*, but little is generally needed. The natural sequence of phenomena—as has been shown—is a state of concentration, followed by one of expansion or reaction, and this again followed by a stage of relaxation or sweating. As the subsequent stage is modified by that of its precursor, it is, of course, important to diminish the duration of each stage, as far as is practicable.

In the *cold stage*, hot diluents may be freely allowed, with heat to the external surface;—a bladder, half filled with hot water, to the epigastrium, and hot applications to the soles of the feet. Of the means to be employed prior to the supervention of the cold stage, for the purpose of mitigating its violence, mention will be made hereafter. Of late years, it has been proposed to bleed in it. The practice has been warmly advocated by many in Great Britain, India, and in this country; but by others, it has been esteemed injurious,—probably, however, on faulty theoretical considerations. The old notion, entertained of the cold stage, was, that it is one of debility, and that the patient rather requires remedies, which should prevent him from sinking. It has been seen, that, in reality, it consists of a recession of the vital activity from the circumference towards the centre, and that the phenomena are those of internal engorgement or congestion. This latter view so strongly impressed a pathological writer of eminence, now no more, Dr. Mackintosh, that he determined to employ bloodletting in the cold stage with the view of removing this engorgement, and when he was himself attacked with intermittent fever, first put it in practice in his own case. The result was salutary; and, instead of danger supervening from debility, he felt manifest relief. After this, he practised it repeatedly; and, to use his own language, found, that in a great majority of instances, it cut the cold stage short. “In fact,” he says, “it will rarely fail in stopping the existing paroxysm, and, on many occasions, it has prevented a return of the disease to which the patients had been long subject, and by which they were nearly worn out. It is difficult to determine what quantity of blood it will be necessary to draw in any given case; sometimes it requires twenty-four ounces; I have known three ounces suffice; and, in one case, an ounce and a half

produced the full effect. The larger the orifice in the vein, the greater is the chance of arresting the disease at a small expense of blood ; but, in many cases, the operation is attended with considerable difficulty from the convulsive tremors, which affect the whole body. I was once successful in arresting the disease by bleeding in a cold stage, which had continued twenty-six hours ; but I regard this as an extreme case. The blood sometimes only trickles down the arm ; and, as the system is relieved, the stream becomes larger and stronger, till at last it springs from the orifice ; and frequently before six ounces are taken, the patient will express relief from violent pain in the head and loins, and it will soon be observed, that he breathes more freely. The tremors become slighter and slighter, and by the time that a few more ounces are abstracted, they will cease altogether, and with them will vanish the painful sensation of cold. The pulse will be found stronger, and a gentle moisture will be observed on the body. If the patient be properly managed with respect to bed-clothes, neither hot nor sweating stage will in general follow. Most of the patients who have been treated by myself, or by my pupils under my immediate inspection, have fallen asleep immediately after the operation ; but some have even got up and dressed themselves."

The experience of the practitioners of India in their intermittents is equally favourable. "The benefit of bleeding in the cold stage of intermittents"—says Mr. Twining,—“is now so well known in India, that I need hardly say, that in a great number of cases it arrests the paroxysm, and is the best mode of preventing those ulterior visceral engorgements and indurations, which too often prolong the disease till the constitution is ruined. The patient should be bled in the recumbent posture, and permitted to lie quiet for an hour after the bleeding ; and, during the paroxysm, he should not be heated with too much bed-clothes, but may be allowed a blanket in the cold season, or a sheet in the hot weather ; he should be supplied with a cup of warm tea, or gruel, or thin sago, soon after the blood has ceased to flow. By these means, he will seldom have either a hot or sweating stage, and the majority of patients, who have used a sufficient course of mild purgatives before the bleeding, will not have a return of the paroxysm, provided they are tolerably well furnished with clothing, and not exposed to atmospheric vicissitudes.” In this country, so far as the author knows, the practice has not been much employed. Some cases have, however, been published, which are favourable to it. It is a plan by no means new in congestive fevers, combined or not with gentle excitants,—the abstraction of blood giving occasion to the exertion of a *vis à tergo* from the vessels in which the blood is accumulated, and the gentle stimulation aiding in re-establishing the equilibrium. For the reasons before stated, the taking away of blood in the cold stage of an intermittent is by no means liable to the objection of being unphilosophical. Although the organic actions may be subdued at the circumference, they are often energetically exerted at the centre ; and the thermometer, placed under the tongue, will frequently be found to indicate a heat some degrees more elevated than that of health. Certain interesting experiments have been published, which bear a close

relation to this subject. Dr. J. Reid found—as the result of several experiments on the lower animals—that disgorging the right side of the heart, when its contractions were enfeebled or suspended, by opening the jugular vein, had, in some cases, a decided effect in renewing its action; and the same may, doubtless, occur from bleeding practised under the circumstances mentioned. It is important, indeed, to bear in mind, that congestion of the cavities of the heart speedily arrests the action of that viscus.

The author has not practised bloodletting in the cold stage of intermittents, because he has not, at the time, considered it necessary, although he believes that it may be employed with safety, and occasionally with advantage. During one epidemic, it was tried in Dublin in not less than one hundred cases, and the general conclusions were; that, in the vast majority, bleeding may be practised with safety; that there is very little or no danger of the patient dying of debility, as was formerly apprehended; and that, in many cases, the treatment was found to diminish the violence, and ameliorate the character of the paroxysms; and, in some, had the effect of completely arresting the disease. Dr. Stokes found, however, that in some cases the cold, and in others, the hot stage was increased in violence by it; and that in several cases the paroxysms were brought more closely together, and the period of their recurrence anticipated. This observation, Dr. Stokes remarks, was confirmed by his friend Mr. Gill, who visited the fenny part of Lincolnshire, during the prevalence of an epidemic ague, to put the practice to the test. In a communication made by Mr. Gill to Dr. Stokes, he stated, that he felt quite certain, he had it in his power to convert many cases of intermittent into continued fever by bleeding in the cold stage.

Between forty and fifty years ago, a plan was suggested for arresting the cold stage by applying pressure to the extremities. Dr. Kellie maintained as the result of his own observation, that if tourniquets be applied so as to obstruct the circulation in two of the extremities at any time during the cold stage, the hot stage will supervene in three minutes afterwards,—that if they be applied previous to the paroxysm, the cold stage will be wholly prevented; and that by such removal or prevention of the cold stage, the succeeding hot stage will be rendered milder, and of shorter duration. Dr. Kellie recommends, that the compression should be continued ten or fifteen minutes, when the symptoms of the hot stage will generally be moderated; but it ought seldom, he considers, to be continued much longer, as when this was done, he observed that the pulse, which had become fuller, stronger and slower, became smaller and more frequent, and when the tourniquets were removed, the rigors returned. The author has occasionally employed the practice advised by Dr. Kellie, and with analogous results; still, it is very rarely used, and as the succession of stages, in ordinary intermittents, usually takes place with much regularity until they are arrested altogether by the means employed in the apyrexia, nothing more is usually needed than warmth and the simple excitants already recommended. The fact, however, that the phenomena can be interfered with by the modification in the nervous

and vascular functions induced by the compression, is a proof, says Dr. Stokes—that ague is a nervous disease, “for if it were an intermittent gastro-enteritis, as the physiological school teach, how could it be possible to remove it by pressure on the extremities?” In another place, the author has endeavoured to show, that the main action of hæmostasis is to detain the blood in the cutaneous vessels, and thus diminish the extent of internal engorgements.

When the state of concentration is giving way to one of expansion, —or, in other words, when the cold stage is passing away, and the *hot stage* is commencing, and *à fortiori*, when it is established, the clothing of the patient should be light, free ventilation be admitted, with cold drinks, cold or tepid ablution of the extremities, and the whole of the refrigerant medication and regimen. Bloodletting has been advised, but it can only be needed where active hyperæmia occurs in some internal organ. The hot stage is a part of the paroxysm, and will eventuate in the sweating stage, if no treatment at all be adopted; and, usually, no other agents are demanded than those belonging strictly to the class of refrigerants. No drugs certainly are needed; not even opium, which was at one time highly extolled both in this and the cold stage of intermittents. Its beneficial agency—where it has been experienced—is another exemplification of that pathology, which connects this disease largely with abnormal conditions of the nervous system; and it will be seen, that the effect of the agents employed during the interval corroborates greatly this view of the subject.

When the *sweating stage* is succeeding or has succeeded to the hot, it is usually sufficient to add somewhat to the clothing, but not so much as to encourage profuseness of the secretion. It has been advised to dry-rub the patient, and replace the wet clothing with dry; but this cannot often be necessary; and, indeed can rarely be done without inconvenience and some degree of danger. The sweating stage is a sequel of the hot stage, as the latter is of the cold stage, and more harm may arise from officiousness than from leaving this part of the paroxysm to itself. In this—the sweating stage—tepid drinks may be permitted; cold drinks should be used with great caution, and the hot are neither advisable nor grateful. As good a rule as can be observed, in regard to drinks, throughout the paroxysm, is to permit *hot drinks* during the *cold stage*; *cold drinks* during the *hot stage*; and *tepid drinks* during the *sweating stage*.

Such is the general plan of treatment to be adopted during the paroxysm of an intermittent when of a simple kind. Should complications exist, they must of course be met; and much will depend upon the character of the endemic, as affected by locality or by special epidemic influences, at particular seasons. Should local inflammation or hyperæmia complicate the paroxysms, bleeding may be needed here as where the same complications accompany other forms of fever. It is chiefly, however, during the apyrexia, that these can be appropriately combated, as the phenomena are greatly masked by those of the paroxysm. If irritability of the stomach be present, the soda water, or the soda powders of the shops,—in other words,—carbonic acid, may

be prescribed occasionally; or gentle stimulants, combined or not with small doses of laudanum, may be administered; and if these should fail, a sinapism may be applied to the epigastric region. The revellent effect of a common cathartic enema is often, in such cases, highly serviceable.

R.—Sp. æth. nitric. fʒj.  
Tinct. opii gtt. v.  
Mist. camph. fʒxj.—fiat haustus.

It is as impracticable, as it would be unnecessary, to point out all the complications that may present themselves in the course of a paroxysm of ague. The intelligent practitioner will know how to combat them according to rules, that are laid down in the course of this work, when treating of those affections. The cases, however, of pernicious or malignant ague require a few remarks. The great danger, in these affections, is the concentration of the circulation in the interior, to so great an extent, that the patient may die of the congestion. Hence, it is important to cut short the cold stage, if practicable, and induce reaction as speedily as possible. This must be done by the remedies already recommended, and great discretion may have to be exercised by the physician, as to the precise mode of management; whether—for example—it may not be advisable to take away a few ounces of blood from the arm, whilst, at the same time, he may be administering internally wine-whey, or some diffusible excitant;—holding the lancet, in other words, in one hand, whilst he is provided with an excitant in the other. As soon as the hot stage is fully formed, the danger is mainly over. Should signs of hyperæmia or of inflammation in some internal viscus present themselves, topical bleeding or revellents—as blisters or sinapisms—may here, likewise, be demanded, whilst at the same time it may be necessary to support the powers by wine-whey, and other appropriate nourishment. In these forms of the disease, it is important to prevent the paroxysms as speedily as possible: in the worst cases, the most imminent danger attends their recurrence,—the patient frequently dying in the second or third paroxysm.

2. *Treatment during the interval.*—As in all periodical diseases, the most important part of the management is during the interval, and the success of the practitioner is so great in all ordinary cases, that the treatment of intermittent fever has been regarded as more simple than that of any other disease. Since the discovery of the invaluable properties of the cinchona,—the bark, as it has been called *par excellence*,—it has been generally employed except in domestic practice, and has been esteemed the “great specific:” the term “specific” may, indeed, with as much propriety be employed in the case of the bark, as in that of any therapeutical agent whatever. It was formerly very generally given in substance, but large doses being required, the insoluble ligneous matter frequently accumulated in the bowels so as to produce mischief,—so much, indeed, that one pathological writer of eminence remarks, that the question has often suggested itself to him, whether it were not more injurious than beneficial. Dr. Mackintosh observes, that he has seen it cause serious intestinal irritation, as displayed by griping pains

in the bowels, diarrhœa and painful tenesmus. On examining the stools in these cases, they seemed to consist chiefly of bark, with a considerable quantity of mucus, occasionally tinged with blood. In another work (*General Therapeutics and Mat. Med.*, 3d. edit. ii. 19, Philad. 1846) the author has alluded to a case—not of intermittent fever—in which this injurious effect of the powdered bark was exhibited. A young lady, of markedly scrophulous temperament, and somewhat predisposed to pulmonary consumption, was attacked with bilious fever, which was actively treated, and in the course of three or four weeks yielded; the debility, however, was so great as to induce the practitioner to prescribe a tonic; and the cinchona was selected, and administered in powder. After she had taken it for some days, vomiting and purging occurred, accompanied with occasional chills of the most distressing character. Bark was discharged in quantities in the evacuations; and, under the irregular actions, thus excited, tubercles—already present in the lungs—inflamed and suppurated, and this most rapidly; hectic fever, and every symptom attendant upon the confirmed stage of pulmonary consumption, supervened, and she gradually sank under the malady; yet no signs of phthisis were present prior to the derangement produced by the bark in a frame already debilitated by the previous malady. With such objections to the cinchona in substance, and with the fact, that the ordinary preparations are of inferior efficacy, it is easy to appreciate the value of the discovery of a mode for separating the active principle from it. This was done upwards of twenty years ago, (1820,) and so rapidly and extensively was its efficacy promulgated, that in the year 1826, in two laboratories of Paris for the preparation of quinia, 59,000 ounces of the sulphate—the form best known and most frequently prescribed—were prepared. (See the author's *New Remedies*, 5th edit. p. 532, Philad. 1846.) For a time, the sulphate was obtained in this country from Paris; but in the year 1845, the author was informed that probably from 40,000 to 50,000 ounces were made in Philadelphia. An additional evidence of the value of this discovery, was recently mentioned to the author:—although the best cinchona bark could not be purchased, at the time, for less than one dollar and thirty-seven and a half cents per pound, and in powder for less than one dollar and fifty cents,—cinchona powder (so called) might be obtained for ten cents per pound. This consisted of an admixture of the false and other barks with the cinchona or true barks, and, generally perhaps, not a particle of the latter could be detected in it. Yet the appearance of the true and the spurious powder was so nearly alike, that no difference could be observed even by an experienced eye.

The plan usually pursued by the author, in the treatment of simple intermittent, is as follows.—If the gastric functions be disordered, as indicated by furred tongue, nausea, want of appetite, &c., a gentle emetic may be exhibited, (*Pulv. ipecacuanhæ* gr. xx.) with the view of removing the morbid secretions, and preparing the way for the action of the quinia upon the nerves of the lining membrane of the stomach; or it may be merely necessary to administer a gentle cathartic.

R.—Rhei pulv. gr. x.  
Magnes. gr. xv.  
Zingib. pulv. gr. v.—M.

In a case of a tertian, this plan may be adopted on the day in which the paroxysm is not expected.

If the paroxysms have recurred regularly about the same hour—and these cases are the most manageable—a mixture of the sulphate of quinia is prepared—of such strength, that five grains may be administered about an hour and a half before the paroxysm is expected, and five more in an hour afterwards.

R.—Quiniæ sulphat. gr. x.  
Acid sulphuric. dil. gtt. viij.  
Aquæ f̄iij.—M.  
One-half for a dose.

This will generally be sufficient to arrest the paroxysm; but, if, notwithstanding, signs of the cold stage should appear, a draught, containing fifty or sixty drops of laudanum, may be administered, which will almost invariably be successful. This plan succeeds at least so generally, that the author has rarely found it necessary to have recourse to any other.

It has been already remarked, that intermittent fever must be regarded as a disease in which the function of innervation is greatly concerned; and this view of the subject is supported by the effect of remedies. The precise mode in which they act in preventing the paroxysms, as well as other affections that are characterized by periodicity, is by no means clear. The only theory, however, which appears probable is, that they produce a new impression upon the nerves of the stomach, and through them on the nervous system generally; and that the new action, thus induced, is sufficient to break in upon the morbid catenation. This view is, at least, strengthened by the fact, that a powerful emotion has been found to produce a similar effect with the tonic; has completely prevented an expected attack, and, even after its inception, has removed it. Accordingly, fear is ranked, by many practical writers, amongst the febrifuges or antiperiodics to be employed in ague; and the efforts of the tractorizer and the animal magnetizer exert their influence in the same manner. Under these views, the author prefers administering sulphate of quinia in solution to the pilular form advised by many. If the object be to produce a new impression on the nerves, it is obviously advisable to make the revulsion as extensive as possible. This is effected by the quinia in solution, which not only exerts its wonted influence upon the nerves of the lining membrane of the stomach, but likewise upon the gustatory nerves,—the impression on the latter being by no means slight or transient.

The mode, advised above, of administering the quinia, is not approved by all. Some prefer distributing the ten grains through the twenty-four hours of the apyrexia of a tertian, in divided doses. Of late, it has been strongly recommended to administer much larger doses of the remedy,—from twenty to one hundred grains, for example, during the apyrexia, and as much as twenty to thirty grains, and even more, in a dose. There is no question, that the revellent

effects, produced by these large doses, will often be successful, when smaller doses are ineffectual; but in the cases that have fallen under the author's care, in different parts of the globe, these large quantities have been unnecessary. In such doses, it produces, at times, narcotic effects, and occasionally influences certain nerves especially causing inability of utterance, and in others deafness; but these effects soon pass away.

The state of the stomach sometimes forbids the use of quinia by the mouth. If all means have failed in allaying the gastric irritability, it may be used in the way of enema,—six grains, or ten, or more being mixed with thin starch, and thrown up a short time before the paroxysm, or at the inception of the same. When used endermically, from four to eight grains of the sulphate may be sprinkled or applied in the form of ointment on a blistered part, once or oftener in the day. The blister may be placed over the epigastric region.

Cases of successful treatment of intermittents have been published by Dr. G. Lane Corbin, of Virginia, in which the blistered surfaces were “coated” with the sulphate of quinia, or treated with plasters formed of sulphate of quinia, 5 drachms, simple cerate, 4 ounces, incorporated well together, and spread of the thickness of a blistering plaster. The sulphate of quinia has likewise been used iatroleptically;—forty or fifty grains being mixed with two ounces of lard, and a portion of this rubbed in on the groins and armpits three times a day.

Various preparations of quinia, besides the sulphate, have been employed,—as the *acetate*, the *citrate*, the *ferrocyanate*, the *muriate*, the *nitrate*, the *phosphate*, and the *valerianate*, but they do not seem to possess any advantages over the sulphate. The Pharmacopœia of the United States had likewise a *Quiniæ sulphas impurus*, which is made by evaporating the liquor, poured off the crystals of sulphate of quinia, to the consistence of a pilular mass, and has been known in Philadelphia under the name of *Extract of quinine*. Twenty-four grains of this, given between the paroxysms, according to Dr. Wood, of Philadelphia, has generally arrested an intermittent.

The active principles of certain other vegetable substances have been administered with the same view as the quinia. That of the willows—salicin—is one of these, respecting the value of which, sentiments are, however, discrepant. It certainly merits no preference over quinia, even in price; for, although an equal weight of salicin may cost less, it requires so much more to produce the same effect, that the cost is perhaps equal. It is, however, of home manufacture, and can, therefore, be obtained in war as well as in peace. The ordinary dose is four to six grains, given every three hours in the apyrexia; or, like sulphate of quinia, it may be given in larger doses a short time before the anticipated paroxysm. By the Italian physicians more especially, piperin, obtained from the black and the long pepper, has been highly extolled, but a difference of opinion exists as to its antiperiodic virtues. By some, it has been regarded as the best of all; and, by many, as fully equal to any. It is given in the form of pill.



R.—Piperin. gr. xii.

Extract. gentian. q. s. ut fiant pilulæ xii.

Dose, one, every hour during the apyrexia.

Phloridzin, obtained from the bark of the root of the apple-tree; and cetrarin, from the cetraria Islandica, have been recommended, but they are scarcely ever employed. Their properties are detailed in another work, (*New Remedies*, edit. cit. p. 491.) In certain cases, even the most active of these preparations fails. The sulphate of quinia may be administered carefully and assiduously; and, notwithstanding, but little impression may be made on the disease. In these rare cases, the author has found powdered cinchona at times successful; a circumstance which would appear to show, either that cinchona may contain other active antiperiodic principles besides sulphate of quinia, or that the insoluble ligneous matter,—however objectionable it may occasionally prove, by accumulating in and disordering the intestinal canal,—may still exert some influence, by aiding in inducing the new nervous impression, which arrests the intermittent. A drachm of powdered cinchona is generally as much as the stomach will bear; and from half an ounce to an ounce, administered judiciously in the apyrexia of a tertian intermittent, will commonly be sufficient:—or an ordinary dose of sulphate of quinia may be given in the cold infusion of bark.

Sulphate of quinia is so easily attainable, that the indigenous remedies, formerly so much employed, have nearly gone out of use. The bark of the dogwood—*Cornus Florida*, *C. sericea* and *C. circinata*—of the tulip tree, *liriodendron tulipifera*, and of *æsculus hippocastanum* or horse-chestnut, and the root of *aristolochia serpentaria* or Virginia snakeroot, have been long known as antiperiodics in ague; the last being frequently associated with cinchona. The bark of the horse-chestnut has been proposed, in modern times, as the best substitute for the cinchona, when neither it nor its active principles can be procured. In the wars of Napoleon, when bark was very scarce, it was much used, and the Pharmacopœia of Prussia contains a formula for a *Pulvis chinæ factitius*.

R.—Cort. hippocist.

C. salieis.

Gentian. rubr. rad.

Calam. aromat.

Caryophyll. aa ʒij.—M. et fiat pulvis.

This powder, it has been affirmed by Hufeland, is an adequate substitute for cinchona in three cases out of four.

The sulphate of bebeeria has been used in the same cases as the sulphate of quinia, and appears to possess all its antiperiodic virtues. A secret preparation, sold under the name of "*Warburg's Fever Drops*," appears to be a tincture of bebeeria—probably made from the seeds of the *Noctandra Rodiei*. (See the Author's *New Remedies*, 5th edit. p. 119, Philad. 1846.)

These are the chief vegetable febrifuges, employed in intermittents of late years, and, therefore, those only that are worthy of the attention of the therapist of the present day. The catalogue might, however, be largely extended.

Arsenic has been long prescribed for the cure of ague. In the fenny districts of England, an empirical preparation, under the name of *tasteless ague drop*, was long implicitly relied on. On the strength of the recommendation of Dr. Fowler, the *liquor arsenicalis*—a solution of arsenite of potassa—commonly called *Fowler's solution*, was admitted into the pharmacopœias. It is unquestionably possessed of efficacy as an antiperiodic, (Liq. potass. arsenit. gtt. v.—viii. in a glass of water, given every four or five hours during the apyrexia), and has been conceived by one writer, Dr. Brown, from extensive experience, to be superior to the bark in substance, but inferior to the sulphate of quinia. It may be administered in cases where the quinia is found to be inadequate, or where it disagrees; but it is liable to disorder the system, especially the digestive organs, when long continued; and it is affirmed—the author has not, however, met with a case of the kind—that under these deleterious agencies, some individuals have sunk in the course of a few years; others continued to drag on a miserable existence. We should, therefore, as Dr. Stokes has properly remarked, “decline its employment, whenever we can dispense with it, and though we may not be able to procure Peruvian bark, or sulphate of quinia, we should recollect, that there are many other astringent barks, possessed of febrifuge properties, and which may be employed with safety and advantage.” In some cases that had resisted the sulphate of quinia, the author has recently associated the use of arsenic with full success. In the winter of 1843-4, he presented to the clinical class of the Philadelphia Hospital several cases of quotidian and double quotidian, which had been permanently cured in this manner.

The ferrocyanuret of iron has been highly extolled in ague by many practitioners. Dr. Stokes places quinia first, Fowler's solution second, and cyanuret of iron third in the scale of value. Some have given six or eight grains every four hours during the apyrexia; others from a scruple to half a drachm three times a day. The author has often administered it, especially in hospital practice, as it is a cheap remedy; but he has found it very far inferior to cinchona and its preparations, as well as to the different indigenous tonics before mentioned.

The salts of narcotin have been employed successfully as antiperiodics in intermittents; and Dr. O'Shaughnessy has laid before the Medical Society of Calcutta the results of his experience with them. Sixty cases were treated, of which all but two were successful. Dr. O'Shaughnessy remarks farther, that besides the sixty cases recorded, more than one hundred ague patients had been treated by his pupils and acquaintances with perfect success. (*New Remedies*, edit. cit. p. 462.)

Sulphur is highly extolled by Professor Dickson, of Charleston—now of New York—as a “well known and exceedingly valuable remedy for intermittent fever.” In combination with cinchona in powder it is, he says, one of the most efficient preparations he has ever employed in the management of intermittents, and “is very extensively adapted to the modifications and irregular complications we sometimes meet with.” He prescribes it in the proportion of about half a

drachm of the cinchona to ten or eighteen grains of sulphur, repeated every third or fourth hour, "taking care not to irritate or disturb the bowels with colic or diarrhœa."

In all cases of intermittents, before attempting to arrest the paroxysms by antiperiodics, it is important to remove any concentration of vital activity towards internal organs, otherwise the most energetic agents will utterly fail in their effects; and, in the pernicious forms of intermittents, it is of moment to take advantage of every interval, however brief it may be, for the administration of sulphate of quinia in as large doses as can be borne. The great danger lies in the excessive disturbance of function occurring during the fits, and they must therefore be prevented, if practicable.

In an ordinary case of simple intermittent, the food of the patient, during the apyrexia, should be light and nutritious; and the clothing be carefully attended to. The slightest error in regimen, or exposure to cold and moisture,—even a powerful moral emotion will recall the disease, especially if the patient remain in the locality where he has acquired it. It is essential to remove him to a more healthy situation; and the revulsion, thus induced, often most powerfully aids the action of the therapeutical agents.

In the way of prevention, in aguish districts, the patient should not expose himself to the night air; flannel should be worn next the skin, and undue exposure to atmospheric vicissitudes be avoided; but, in many situations, every care is insufficient to shield the inhabitants from the attacks of their annual visitant.

In regard to the sequelæ of intermittents, much need not be said here, as they have been treated of under the respective heads. These sequelæ are hypertrophy of the liver or spleen, hydropic effusions, &c. As remarked under HYPERTROPHY OF THE SPLEEN, it has been maintained, that the same remedy, which is adapted for the prevention of the paroxysms—sulphate of quinia—is equally adapted for the removal of splenic engorgement. But should this not succeed, recourse must be had to some of the other agents there indicated, and the same may be said of other diseases, that occasionally follow in its train. It has, indeed, been affirmed by some pathologists of France, that intermittent fever is primarily an affection of the spleen. Certain it is, that engorgement of that viscus, which may ultimately become hypertrophy, is one of its attendants; and there can be little doubt, perhaps, that such hypertrophy may be the cause of relapses of the intermittent.

## SECTION II.

### REMITTENT FEVER.

SYNON. *Febris remittens*, *Febris continua remittens*, *Epanetus*; *Fr.* *Fièvre rémittente*; *Ger.* *Nachlassende Fieber*.

In the most marked cases of remittent fever, there are distinct paroxysms alternating with remissions,—one of these usually taking place every twenty-four hours. The disease is, consequently, inter-

mediate between intermittent and continued fever. It has, indeed—as elsewhere remarked—been doubted, whether continued fever should be received into our nosological arrangements; and, with propriety perhaps, all its forms might be considered under the head of Remittent Fever; for, if we carefully notice the cases that are classed under continued fever, we can scarcely fail to observe, that in some part of the day the febrile symptoms are more severe than in others. Still, custom has sanctioned a division of remittent fever, in which those exacerbations, and the remissions between them, are more evident; and which are more frequently seen in climates of great atmospheric heat, and in paludal districts of the same. In such situations, they frequently resemble intermittents so closely, that, by many writers, they are classed under the same head.

Remittent fever, in different countries, assumes different aspects, although essentially the same disease. In this country, we see it annually under the more simple form of our bilious fever. On the shores of the Mediterranean, it appears with certain modifications; and in the East Indies, and in the southern part of the United States, we observe it under the form of the endemic fever. The epidemic yellow fever of this and other countries has likewise been referred to it; although, on this subject, much difference of opinion exists.

For convenience of investigation, it may be advisable to inquire, *first*, into the simple form of remittent; and *secondly*, into the malignant remittent; the *former* of which is extremely common over the whole of the United States; and the *latter* not unfrequently occurs in the summer and autumnal months in the southern and western portions more especially,—disappearing as the frost sets in.

### 1. *Simple Remittent Fever.*

SYNON. Epanctus mitis, Remittens mitis, Febris biliosa, F. polycholica, Synochus biliosus, Febris gastrica; F. cholericæ, Bilious fever, Gastric fever, Gastro-enteritis with bilious complication; Fr. Fièvre rémittente simple, F. bilieuse, F. gastrique; Ger. Galtenfieber.

**Diagnosis.**—Simple remittent fever, where the atmospheric temperature is elevated, prevails everywhere in marshy districts to a greater or less extent; and in India, where a dense underwood exists, it is to be met with, from the simplest form of *Jungle* or *Hill fever* to the most aggravated varieties. It has been properly remarked, that no concise definition could be framed, that would comprise all the varieties of remittent fever; since we find that their predominant characters are greatly modified by the prevailing constitution of the atmosphere at the time, and by the habits and conduct of the individuals, as well as by their peculiarities of constitution; but more especially by peculiarities in the locality, or by particular occurrences affecting it for a season, such as inundations from the sea, or the overflowing of rivers, or untimely rain, and a clouded, foggy, hot and moist atmosphere. The nature and extent of the local affections also give rise to peculiar symptoms and modifications.

In many situations, the autumnal remittents of the most healthy seasons appear to differ but little from those forms of intermittent that are accompanied with disorder of the gastric functions; but, at other

times, the remittents strikingly resemble the pernicious forms of intermittents. The common bilious fever of this country partakes greatly of continued fever:—that is, in many cases, the remissions are by no means marked, and the disease often runs its course in about the same time as the ordinary fevers that are unattended with any gastric complication. The bilious fever of warm climates is, indeed, classed by M. Grisolle—who has never seen it, however—under continued fever.

The prodromic symptoms of remittents are analogous to those of intermittents;—differ so little, indeed, from them, as not to require re-enumeration. The rigors are rarely, however, so great, and, sometimes, the sense of chilliness is wholly, or almost wholly, absent. At times, vague chills, or a sensation as of cold water trickling down the back, alternate with flushings of heat, until ultimately the fever is completely established. At this time, if not previously, great pain is experienced in the head, neck and lumbar region; and in the extremities, especially in the calves of the legs. The condition of the tongue, which is covered usually with a brownish or yellowish crust or fur; under which its sides and edges are often seen of a fiery red; the nausea and vomiting—often of bile; the sense of painful weight and tension in the epigastric and hypochondriac regions; the yellowish hue of the tunica conjunctiva, and the impregnation of the urine with bile-pigment, sufficiently indicate the gastro-enteric or bilious complication. The pulse is generally full and frequent,—not hard, as in active inflammation; and the skin is hot and dry. This febrile condition continues for a longer or shorter period, usually for a few hours, when a gentle perspiration breaks out upon the upper parts of the body, and sometimes generally. The symptoms now yield; but still only to a certain extent. It is a *remission*, not an *intermission*. This lull commonly continues for a short time only, perhaps for an hour or two; when all the preceding functional phenomena recur, and often in an aggravated manner. These exacerbations are repeated, until either the remissions become prolonged, the fever ceases altogether, or the remissions are less and less perceptible, and the fever is continued. The last is so frequent an occurrence in the autumnal fevers of many parts of the United States, as to sanction the remark, already made, that the ordinary bilious fever of the country partakes greatly of continued fever. From the very first, indeed, it may often happen, that the remissions are so slight as not to be readily perceived either by the patient or the physician; and, in some instances of an aggravated character, they may be for a time altogether inconspicuous or absent.

If the disease have been severe from the first, or if it have gone beyond the first week, the symptoms assume greater severity; the fever is constant; the tongue becomes more and more furred or dry, especially along the middle; and signs of the typhoid state frequently supervene;—such as delirium, sinking of the powers; meteorism, with tenderness of the abdomen on pressure; diarrhœa, &c., which may go on progressively augmenting, until the disease terminates fatally.

When death ensues in the bilious remittent of this country, it is generally, according to Dr. Dickson, after a period varying from seven to thirteen days, and he thinks the vulgar calculation, which places

the average duration of the most ordinary form of bilious remittent at about nine days, is not far from the truth. The ordinary form of inflammatory remittent is, however, rarely fatal; and yields almost always to the plan of treatment laid down hereafter. Dr. Dickson states, that from all he can learn on the subject, he is not disposed to rate the proportion of deaths in Charleston at more than one in thirty; and he is of opinion that it may exceed that amount, yet not greatly, in the country practice throughout the Southern States. The author, from personal observation in one part of the South, is quite satisfied, that the mortality under a treatment not very dissimilar to that advised by Dr. Dickson, is much greater. It is well known, however, that locality has much influence on the disease, causing it to be much more malignant, and less manageable, in some places than in others.

One of the most important circumstances to be borne in mind in the history of remittent fever, is,—the tendency to local hyperæmia or inflammation; the presence of which gives the peculiar characters, by which we find the remittent of one season distinguished from that of another. In all cases, perhaps, the lining membrane of the stomach or small intestines, or both, is implicated; and hence the term *gastric* so universally applied to it. In hot climates and seasons an unusual degree of erethism exists in the gastro-enteric mucous membrane, which, under the influence of the causes of remittent fever, and the irregular actions occurring in the course of the disease, may be developed into inflammation of greater or less severity. Where it is to a great degree, it spreads along the biliary ducts to the liver; for a time, arrests the secretion of the bile, and gives occasion to functional phenomena denoting hepatic complication,—such as pain and sense of fulness in the right hypochondrium; absence of bile in the matters evacuated by vomiting, and in the alvine evacuations; with yellowness of the surface of the body, and especially of the tunica conjunctiva. After a while, however, in favourable cases, this hyperæmic or inflamed condition of the liver passes away, and the restoration of the hepatic functions is denoted by the evacuation of a dark pitch-like matter, which has been esteemed *critical*; but probably denotes nothing more than that the pathological cause of the deficient biliary secretion has passed away, and that the engorgement, which was the cause of the detention of the bile in the gall-bladder and ducts, had subsided. In other cases, where the gastro-enteric hyperæmia is not so great, the hepatic symptoms may be less marked, or be indicated for the first few days simply by a yellowish tinge of the conjunctiva, denoting, that the secretion is not freely poured into the small intestine. The liver, in this case, instead of having its secretion locked up, as it were, in the gall-bladder and ducts,—after the first few days is merely excited to greater secretion, and, accordingly, the disease is accompanied by a copious flow of bile, which is indicated in the evacuations both by vomiting and stool. According, therefore, to the degree of gastro-enteritis existing in any individual case, there may be signs of absence or of undue quantity of bile in the evacuations; but, in both cases, the liver is affected secondarily,—a slight irritation in the lining membrane of the duodenum acting in the same manner as

one of our cholagogue cathartics; the irritation, produced by it, being communicated, in the manner above mentioned, along the ductus communis choledochus and the hepatic duct to the liver, and along the cystic duct to the gall-bladder; so that the former is excited to greater activity of secretion, and the latter to a more frequent discharge of its contents. In the summer and autumn of 1824, in Charleston, according to Dr. Dickson, very few patients recovered without becoming jaundiced.

**Causes and Pathological Characters.**—Of these we shall treat under the next variety of Remittent Fever.

**Treatment.**—The management of ordinary bilious fever has become, in many regions of this country, a matter so completely of routine, that, as in the case of intermittents, it is often treated at home without the aid of the physician. In many places, bleeding and large doses of calomel are relied on; but if, either owing to the severity of the case, or to its aggravation by cathartics, the disease prove unmanageable, the physician is appealed to, and it, doubtless, often happens, that under such circumstances cases prove fatal, which, had he been called earlier, might have eventuated in health. In all these cases, in which such large doses of calomel are administered, the practitioner, or the layman, whichever it may be, is led to persuade himself, that the climate requires them. But this argument—as elsewhere remarked—(*General Therapeutics and Materia Medica*, 3d edit. p. 55, Philad. 1846,) is frequently fallacious and unfortunate, inasmuch as it prevents the adoption of any other plan of treatment, and, consequently, precludes all comparison. It has been a common opinion, that in our ordinary bilious fevers, copious bloodletting and the most active, and therefore irritating cathartics are demanded; and the practice founded on this belief, was at one time universal in this city (Philadelphia), and elsewhere; so much so, indeed, that no other was extensively adopted until of late years; but since a greater degree of attention has been paid to the pathology of the gastro-enteric mucous membrane in those affections, and since better reflection has suggested, that whilst we are keeping the different sensitive organs, which are seated externally, free from all irritation, we ought not to be perpetually irritating the lining membrane of the stomach and bowels, itself already in an excited condition, the employment of irritating cathartics has been pretty generally abandoned. The digestive canal is now kept clear, and daily clear, by means of mild cathartics, which remove the morbid secretions as they are formed, and prevent accumulation of any kind in the canal; whilst the inflammatory and febrile excitement is subdued by the proper use of sedatives—of which bloodletting is almost the only one—and of refrigerants. The experience of the author has sufficiently demonstrated to his own satisfaction, that the ordinary bilious fevers of this country yield far more readily under such a course, than under the mixed sedative and perturbing treatment, which was formerly universal, and still prevails too extensively. In those days—of no distant date—it was laid down, very properly, as all-important, that the excitant influence of light and noise should be excluded from the sick chamber; and that mental and corporeal quiet

should be enjoined; but, at the same time, the practitioner did not hesitate to prescribe an irritating cathartic, which could not fail to excite an already over-excited internal sensitive surface, and compelled the patient to rise from bed perhaps eight or ten times in the course of the twenty-four hours! Where such a system of management—faulty as it was—was universal, it was impracticable—as before remarked—to deduce any inference in regard to its being demanded by the climate. To do this it was indispensable to make an equal trial of various methods, which was rarely, or never done.

Again, cathartics act but secondarily as sedatives. Their first impression is unquestionably as local excitants, in consequence of which the secretion, that proves depletive, ensues; and under the disturbance induced by the more active remedies of the class, more mischief may be done by their excitant, than good by their antiphlogistic agency: still, mild evacuants are absolutely necessary throughout the whole course of those diseases; and when they become protracted,—upon the principle of revulsion, agents may be demanded, the propriety of which, in the earlier periods of the disease, might be more than questionable.

The plan of treatment most advisable in an ordinary case of remittent fever is the following. When the organic actions are very much exalted, as indicated by the ordinary signs of febrile excitement, it may be necessary to take away blood from the arm, if the practitioner be called upon early in the disease; but in the majority of cases this is not needed, unless some hyperæmic affection is apparent in an internal organ. Should such a condition exist, it may be advisable to bleed both generally and locally: the gastric complication will usually, indeed, suggest the application of cups or of leeches over the epigastrium in the course of the disease.

Throughout the affection, the patient should be kept in bed, and the air be freely admitted, unless it should excite a feeling of chilliness; the bed-clothes should be regulated according to the feelings, and the whole refrigerant regimen be adopted, allowing ice-water freely, whenever the skin is steadily hot and dry; but in smaller quantities—or not at all—when the surface is moist. There is, in the whole catalogue of our therapeutical agents, none that is perhaps as efficacious as ice, combined with the refrigerant regimen generally. As a part of this must be included cold or tepid sponging of the extremities, which may be used under the circumstances before mentioned,—that is, whenever the skin is steadily hot and dry. Even the cold affusion is highly recommended by Dr. Dickson, “The particular indications,” he says, “which demand the resort to it unhesitatingly, are found in the youth and general vigour of the patient, and the heat and dryness of the surface. The local determination, which it controls most promptly, is that to the brain, shown by headache, flushed face, red eye, delirium, &c., with a full, hard, bounding pulse. Seat your patient in a convenient receptacle, and pour over his head and naked body, from some elevation, a large stream of cold water; continue this until he is pale or his pulse loses its fulness, or his skin becomes corrugated and he shivers. On being dried and replaced in bed, a genial sense of comfort and re-



freshment will attest the benefit derived from the process which, as I said above, may be repeated, whenever the symptoms are renewed, which it is so well adapted to remove."

Where the shock would be too great, immersion, or ablation—sponging, which is the mildest mode—may be substituted. Dr. Dickson speaks also in the highest terms of the *douche* or "spout bath," in cases where the "cerebral determination is inordinately violent, dangerous, or tenacious." The patient being supported in a leaning posture over the bedside, the water is dashed from a pitcher over the vertex for some minutes, and from some elevation above him. "Many," he says, "who dislike all the other modes of using cold water, entreat for this operation as the most soothing of possible indulgencies; nor have I met with any ill consequences from allowing its most unlimited frequency of repetition." "The cold bath," he adds, "in its several modes of general application, is prohibited when the patient is of feeble habit of body; much advanced in age; much exhausted or enfeebled at the time; when the pulse is weak, or the skin cool or covered with moisture; when the lungs are oppressed or inflamed; and when diarrhœa is present. Its repetition is forbidden when it has occasioned a protracted chill or rigor, or the patient has continued to feel cold or uncomfortable from it."

Mental and corporeal quiet should be strictly enjoined; and, therefore, no more light or noise should be permitted than is absolutely necessary. In like manner, the alimentary canal should be kept clear daily by gentle cathartics, as by small doses of *oleum ricini*, (fʒj.—fʒiij.); rhubarb and magnesia;<sup>a</sup> or sulphate of magnesia alone or united with magnesia;<sup>b</sup> and in the latter periods of the disease—and frequently indeed in the earlier stages—it may be necessary to administer an enema daily, and a dose of the cathartics, above recommended, at an interval of several days.

<sup>a</sup> R.—Rhei pulv. gr. x.  
Magnesiæ,  
Zingib. pulv. aa gr. v.—M.

<sup>b</sup> R.—Magnesiæ sulph. ʒvj.  
Aq. menthæ pip. fʒiv.—M.  
Dose, one quarter, night and morning, if  
necessary,—Or

R.—Magnesiæ sulphat. ʒiij.  
Magnesiæ carbonatis ʒj.—M.  
Dose, one quarter, night and morning.

The enema removes the evacuations chiefly from the lower part of the intestinal tube; but it likewise solicits the peristaltic action downwards, so as to evacuate the whole canal,—not perfectly, however, and hence an occasional cathartic, given by the mouth, may be advisable.

It is not requisite to administer an emetic unless signs of morbid secretion in the stomach should be manifest. In such case, one of the mildest may be prescribed, (*pulv. ipecacuanhæ* gr. xv.—xx.) in consequence of the irritation that is usually present in the mucous membrane.

As the cutaneous transpiration is generally diminished, it has been laid down as an indication, that in this, as well as in other fevers, the transpiration should be restored. Accordingly, diaphoretics, and some of them of a most objectionable character, have been proposed. We

have, in reality, no agents, that prove diaphoretic under all circumstances; and, therefore, the true mode of restoring diaphoresis is to remove the pathological condition on which the obstruction is dependent. When it is removed, diaphoresis breaks out, and this has led to the idea, in all ages, that the diaphoresis is an effort of nature, which is *critical*, and puts an-end to the disease. The matter of fact would seem to be, that the diaphoresis is rather the index than the cause of a favourable change in the malady. Under such views, the efforts of the author are always directed, throughout the disease, to the removal of the morbid organic actions; and, accordingly, he has found the class of refrigerants infinitely more valuable than that of reputed diaphoretics. The routinist prescribes internally his *nitrous powders*,<sup>a</sup> "to correct the morbid condition of the liver, skin, and alimentary canal," or his mixture of the *liquor ammoniæ acetatis*, or nitre; and so long as the doses are not excitant, little or no mischief may arise, provided the sedative system be adopted in all other respects. Time passes on, and the disease runs its course spontaneously to a favourable issue.

<sup>a</sup> R.—Potass. nitrat. pulv. ʒj.

Ipecac. pulv.

Hydrarg. chlorid. mit. aa gr. xij.—M. et divide in partes vj. æquales.

One of these to be given every two or three hours.

Not many ages have elapsed since, in the treatment of all febrile affections, it was generally esteemed improper to adopt a cooling system. Fever was supposed to be owing to some morbid matter in the blood-vessels, which required to be *concocted* or matured, before it could be expelled from the body; and as heat was found to be necessary for the concocting or maturing of matters out of the body, it was conceived, that such concoction, in the pathological conditions referred to, might be promoted by the application of warmth externally as well as internally, or by the adoption of what was termed the *heating regimen*. Every effort was accordingly made to induce sweating, by which—it was thought—the *peccant* humour might be evacuated; and this was one of the reasons, why the establishment of a copious diaphoresis came to be esteemed *critical*. Reflecting minds began, however, to doubt, whether the theory, and the system of management founded upon it, were philosophical, notwithstanding that it was affirmed, as in all similar cases, to be sanctioned by positive experience; but it was not until the time of Sydenham, that any great innovation was introduced in the treatment of febrile and inflammatory diseases. That great observer determined to examine for himself, and not to be guided by the dicta of his predecessors and contemporaries, but to adopt the system which rational inquiry suggested. In spite of all assertions regarding the dangers of adopting the cooling regimen, he unhesitatingly had recourse to it—upon the principle, that where the organic actions are elevated, and the temperature of the system is increased, and where cold is instinctively and anxiously demanded, the true plan of management must be, to temper the morbid heat, and reduce over-excitement by the admission of cool air and the appropriate use of cooling drinks. No greater improvement has been made in the therapeutics of internal diseases than this: the mortality from febrile

affections has been largely diminished; and one disease that was wont to figure prominently in our nosological catalogues—*miliary fever*—has almost disappeared from our observation. This affection was extremely common in the childbed state; and that it was induced by the erethism of the cutaneous surface, occasioned by the prevalent heating plan of treatment, is satisfactorily shown by the fact, that it is now rarely seen—except where that plan has been adopted.

Every rational practitioner of the present day admits, that of all internal refrigerants, cold water—ice cold—is the most effectual; yet occasionally, amongst the uninformed, we meet with apprehensions on this score—the relics of ancient belief,—and with those who are afraid to employ cold as freely as it is advised by the practitioner. The dread of very cold fluids after calomel has been administered is especially entertained. This notion appears to have arisen from the fact, that when the system has been in the very impressible state, which mercury—given to such an extent as to occasion its peculiar effects—induces, irregular actions have been observed to follow exposure to cold; and hence it has been inferred, that a similar result might ensue on the application of a cold fluid to the lining membrane of the stomach, after even a single dose of a mercurial has been taken. All experience, however, shows, that the two agents are by no means incompatible; and did any doubt exist on the subject, and should a question arise as to whether the mercury or the ice water should be dispensed with, we should not hesitate, in the large majority of cases, to adhere to the latter.

It is an interesting point to determine, whether certain agents, generally esteemed to be capable of tempering morbid heat, and hence termed “internal refrigerants,” are entitled to the reputation which they have enjoyed. A well-known writer on materia medica, Dr. Paris, affirms, that “there are *certain saline substances*, which, by undergoing a rapid solution, and acquiring an increased capacity for caloric, produce a diminution of temperature; and if this takes place in the stomach, the sensation of cold which it produces is equivalent to a partial abstraction of stimulus; this, being extended by sympathy to the heart, occasions a transient reduction in the force of the circulation, and by this, or by a similar sympathetic affection, causes a sensation of cold over the whole body.” This definition applies, however, but little to the main articles of the materia medica, that have been looked upon as internal refrigerants. These are nitrate of potassa, borate of soda, and boracic acid,—formerly termed *Sal sedativus Hombergi*. The two last may be banished from the list; for although we are compelled to infer, that experience must have sanctioned their introduction into the materia medica, a later, and probably a better, experience has caused them to be regarded as by no means entitled to the character formerly bestowed upon them.

The definition, by Dr. Paris and others, of an internal refrigerant, refers only to “saline substances,” which, “by undergoing a rapid solution in the stomach,” produce a diminution in the temperature of that viscus. We have not an agent, however, which corresponds with this definition,—certainly, not the nitrate of potassa, for that is always

dissolved before it is taken ; and even were it not, the slight diminution in temperature caused by the solution could scarcely be productive of greater advantage, than a like diminution produced in any other way, as by taking cold water of the same temperature. Experience sufficiently shows, that, as regards the nitrate of potassa, it is an excitant, and that it is only refrigerant when it comes rigorously under the definition before given, that is, "when it undergoes a rapid solution, and acquiring an increased capacity for caloric, produces a diminution of temperature, and if this takes place in the stomach, the sensation of cold, which it produces, is equivalent to a partial abstraction of stimulus." But although refrigerant only under these circumstances, nitrate of potassa has been generally ranked as an "internal refrigerant," and the same may be said of the saline ingredients, that constitute the common saline or neutral mixture. In the prescriptions of the physician these are commonly directed to be prepared, that is dissolved, in the shop of the apothecary ; are kept in the sick chamber : and administered, at the temperature of the chamber, in divided doses, during the day. Yet, notwithstanding these reflections, suggested by an attention to "rational therapeutics," we ought to bow to the weight of evidence, did experience show that the nitrate of potassa is really capable of exerting a refrigerant influence ; but experience—as already remarked—shows it to be not temperant but exciting. It may be said, however, that the use of this agent, as well as of the saline mixture, has really been found beneficial in fever ; but it may be doubted, whether the practitioner ought to place reliance upon either one or the other, except as agents in the fulfilment of a temporizing or palliative policy. When the saline mixture is administered in a state of effervescence, it is often most grateful to the patient, and the impression, made on the stomach by the carbonic acid gas, disengaged by the union of the vegetable acid and the carbonated alkali, exerts, at times, a pleasing influence. But when the saline mixture, or the solution of nitrate of potassa, is administered as above described, the salutary influence may be occasioned, after all, in many cases, by the confidence reposed by the practitioner in his "febrifuge mixture :—" under this confidence, he is less likely to interfere with the diseased organic actions in the officious and perturbing manner so often practised ; and, in this way, the use of a comparatively inert compound may be followed by positive benefit. (See the author's *General Therapeutics and Mat. Med.* 3d edit. ii. 205, Philad. 1846.)

The refrigerant method, guided by sound judgment as to its form and extent, is, in the author's opinion, far more to be relied on than the administration of diaphoretics ; and in this respect he is happy to find, that his experience coincides with that of one who had numerous opportunities for observation in the bilious remittent fevers of the Mediterranean. Sir William Burnett states, that sudorifics have never appeared to be attended with the smallest advantage, especially when employed in the early stage. They certainly, as he properly observes, often fail to induce perspiration, and, moreover, at the commencement of the disease, the patient is often covered with a profuse perspiration from which he derives no relief. Under the view of the author, that

there is no such thing as a direct diaphoretic, and that, in all cases, diaphoresis must be induced by removing the condition, which gives rise to its diminution or arrestation, there may be agents, usually classed amongst diaphoretics, which might be of benefit; but to employ excitant diaphoretics in all cases cannot fail to add to the mischief; and, accordingly, almost all diaphoretics, except the refrigerant, are generally abandoned. Nauseants—as the preparations of antimony—are, indeed, administered, but they are given under the views just mentioned. The influence of nausea on the organic actions is one of sedation. When, therefore, nauseants are administered to the necessary extent, they reduce the organic actions, which give rise to the suppression of perspiration, and in this way prove diaphoretic.

During the existence of simple remittent fever, should any sign of hyperæmia or of inflammation of any internal organ present itself, it must be met by revellents,—as by cupping, blisters, sinapisms, &c. Dr. Eberle, has recommended the revellent action of mercurials from the very first. Under his view, that calomel has the power of altering the morbid condition of the liver, and of the whole capillary system, he is of opinion, that taking also into consideration its gentle aperient effects on the bowels, it is peculiarly calculated to do good in this disease. Under these hypothetical views, he advises, that the calomel should be early and regularly administered, and continued until slight manifestations of its specific influence on the system are noticed on the gums. When these occur, its use must be suspended. Dr. Eberle remarks, that he had employed this remedy in nearly every case of remittent fever, which had come under his management during fifteen years, where he had been called to the patient during the first two or three days of the disease; and, in a great majority of cases, he found all the symptoms abate, and often very considerably, as soon as the mercurial influence became conspicuous, and, in many instances, a speedy convalescence ensued. He thinks, however, that although a very gentle mercurial impression is generally decidedly beneficial, strong mercurialization or ptyalism appears to be as generally detrimental,—at least in the ordinary remittents of this climate; and that, in the advanced periods of the disease, the constitutional operation of mercury will be much more apt to prove injurious than beneficial. In general, he adds, the salutary influence of mercury is restricted to the first five or six days of the disease; and the earlier its general operation can be procured, the more certainly will it prove advantageous. Dr. Eberle's testimony does not, however, do much more than establish the fact, that the ordinary remittents of this country will terminate favourably, when mercury is administered; and he might have added, that they terminate equally favourably in the hands of those who pursue the general principles of treatment inculcated in this section, and yet who never employ mercury. His own experience could not enable him to make any comparison of different methods of treatment, inasmuch as he states, that for more than fifteen years he had employed the remedy “in nearly every case of remittent fever,” which had fallen under his management. The author, on the other hand, scarcely ever employs mercurials in the early stages of the disease. The morbid condition

of the liver, he believes to be dependent upon the state of the lining membrane of the stomach and duodenum, and with this belief he avoids everything that could add to the erethism there seated. But when the disease has proceeded beyond the second week, and the associated actions keep nearly at the same point; and especially where adynamic symptoms present themselves, he has seen great apparent benefit from the administration of mercury so as to induce a new action, and break in upon the morbid mischief already present. His experience differs, therefore, in this respect, from that of the respectable writer, whom he has cited.

When the first remission occurs, the sulphate of quinia must be prescribed, as directed under **MALIGNANT REMITTENT FEVER**.

In regard to the diet in a case of simple remittent, it must be carefully attended to. Of the use of ice and cold water, mention has already been made: lemonade; barley-water acidulated with lemon-juice; currant-jelly mixed with water; gum arabic dissolved in water and acidulated and flavoured with lemon-juice and lemon-peel may be allowed, and, gradually, the farinaceous decoctions of arrow-root, sago, &c.

## 2. *Malignant Remittent Fever.*

**SYNON.** Pernicious remittent, Epanetus malignus, Remittens maligna; *Fr.* Fièvre remittente pernicieuse; *Ger.* Bosartige nachlassende Fieber.

**Diagnosis.**—Remittent fever may run its course in the manner described; or, from being mild and simple at its commencement, it may extend beyond the second week, and present functional phenomena characterized by great adynamia and ataxia. The tongue becomes more and more loaded with a brown fur; there is more or less delirium, with intense heat during the exacerbations, and all the signs—as before observed—that characterize the typhoid state.

In many parts of this country, and in the marshy districts of the torrid zone, remittents are rarely of the simple kind, but are extremely violent and malignant from the very first. Under such circumstances, the cold stage is generally of brief duration; but, contrary to what is usually observed in intermittent fever, the succeeding fever is extremely violent, and accompanied by excruciating headache, pain in the back and limbs, anxiety, dyspnœa and distressing feeling of weight and oppression in the epigastrium, extending towards one or the other hypochondrium, and especially the left. These symptoms usually continue for about twenty-four hours, when a considerable remission, frequently amounting almost to an intermission, occurs, which, however, is not of long duration. A second paroxysm supervenes of greater severity than the first, which terminates sooner or later with a clammy perspiration. The eyes, during these attacks, are often yellow, watery, and red, and the oppression at the epigastrium is excessive. The paroxysms are repeated, if the disease be left to itself, until either a termination occurs by resolution or by death; and this not uncommonly happens in the third paroxysm. If the disease persist beyond the fifth or sixth paroxysm, great prostration supervenes; the remissions become less and less distinct; delirium almost always is present; the

skin is either pungently hot, or clammy cold; and not unfrequently all the signs exist that characterize typhus fever. Petechiæ, vibices, and hemorrhages, are occasionally present. Examples of this violent form of remittent have fallen under the notice of the author in the temperate region of Virginia. A family, proceeding up James River in the heat of the latter part of summer, were compelled to have the windows of the cabin open during the night. On their arrival in the upper country, they were attacked with malignant remittent; and notwithstanding every care, the mother and one of the children died; the others were saved mainly by the vigorous exhibition of the sulphate of quinia during the partial remissions.

The more malignant forms of remittent, which occur during unhealthy seasons, resemble greatly the pernicious fevers to which allusion has been made under the head of Intermittents. They are essentially congestive in their character, and hence the name *congestive fever*, that has been given to them in the southern parts of this Union, where they prevail most destructively in certain years. All the symptoms of the disease indicate extreme adynamia and consequent congestion of blood in the great central organs. It is marked by the early accession of symptoms of debility, oppressed respiration, small, weak pulse, anxiety, prolonged cold perspirations, faintness, cold livid extremities, &c. &c. When the disease assumes this shape, it is alarmingly fatal; and, in our own country, is often most destructive,—receiving, at times, in the south, the name of the *cold plague*. The term “congestive fever” appears, however, to be used in some places very indefinitely. According to Dr. Dickson, of Charleston, in that section of the country, it is made to include—as though the same disease were treated of—the winter typhus and typhoid fevers, and typhoid pneumonia, as well as intermittents and autumnal remittents.

The remittent fever of the Bengal rainy season is said, by Mr. Twining, to rank amongst the most formidable diseases of India. Whilst it continues, the patient can scarcely be considered free from danger, although he may not appear to suffer much, and there may be no symptoms of violent reaction. It sometimes happens, that after two or three slight paroxysms, a change for the worse suddenly takes place, without any evident cause, and death follows within an hour. In very severe cases of this kind, after the second or third paroxysm, each decline of the fever, which generally occurs at from 12 to about 4 o'clock in the day, is followed by profuse perspiration, prostration, and coldness of surface, attended with a torpid state, and a tendency to stupor in some cases, and extreme apprehension of impending evil in others. At the conclusion of the fourth or fifth paroxysm, and sometimes earlier, some patients continue to become weaker and colder until they die. In the more intense paroxysms of the disease, there are two periods which are fraught with danger; one is during the increase of morbid heat, when febrile excitement and high arterial action exist, and there is a tendency to fatal congestion and effusion into the encephalon or other important organs; the other is at the conclusion of the paroxysm, when morbid excitement and high vascular action have diminished or ceased; when the vessels of the surface

are in a state of relaxation, and languor and debility prevail. In some of these cases, the patient sinks gradually into a state which bears some resemblance to the collapse that succeeds to the low form of cholera, and to syncope; and the coldness persists until the patient dies.

The malignant form of remittent is very liable to be complicated with some organic mischief. The alimentary canal, the liver, and the brain, are especially affected. The symptoms, which announce those complications, are intelligible enough. They are those in fact of sub-acute gastritis, hepatitis, and encephalitis. Occasionally, too, the bronchial tubes participate in the morbid condition. In particular varieties of the disease, there is a strong impression on the mind of the patient that he is about to die, an impression which no arguments can remove. In this disease, as in all febrile affections, it is an unfortunate impression, and renders the situation of the patient more precarious. A writer, indeed, who has had experience in this matter, Dr. Brown, affirms, that he does not know whether this impression is to be considered a mental illusion or not; for in every case, which had fallen under his observation, the patient's prediction had been fulfilled.

In very malignant cases, like those which are observed in many parts of Italy, the disease proves fatal in the first three paroxysms, and is accompanied by delirium, which subsides into coma, from which the patient does not recover. When it occurs at a later period, it may be owing to encephalitis, or to some of the diseases of the internal viscera, that are so apt to be induced by it. At other times, death occurs, as in other febrile affections, in consequence of the patient being worn out by irritation, without there being a predominant lesion of any organ,—as manifested, at least, by disorder in the functional phenomena.

**Causes.**—Remittent fever has usually been referred to the same emanations that give rise to intermittents. It is clear, however, that the terrestrial emanations must be different from those that produce intermittents, inasmuch as we observe it very commonly in localities where intermittents are wholly unknown. Bilious remittent fever prevails at certain seasons to a greater or less extent everywhere; and, at times, is observed to be decidedly epidemic, and to visit regions, in which it had been but rarely seen before. In certain parts of the Southern States, in which occasional cases of severe bilious remittents are seen every summer, it sometimes appears with fatal malignity, as in the summer of 1839, and affects a large proportion of the population. In such cases, the disease is doubtless endemic-epidemic in its nature, or depends upon a conjunction of a favouring condition of the atmosphere with appropriate terrestrial emanations; and, unless this favourable conjunction exists, the disease is not produced. This is the cause why it is so much more prevalent in some years than in others, and why it occasionally appears epidemically in situations where it was previously almost unknown. The hill fever of India, according to Dr. Heyne, of Madras, exists constantly and invariably amongst certain descriptions of hills, when others of a different composition are as constantly free from it. Wherever the iron granite or magnetic ironstone rocks occur, there will be fever, whilst the hills whose strata



are free from ferruginous compounds, are equally free from the destructive hill fever. Hence he infers, that the geological composition of the hill is concerned in its production.

On all occasions, in which epidemic disease prevails, it is an interesting object of inquiry to determine the precise nature of the malarious influence; but, as yet, we are in entire darkness on the subject. We know that excessive heat induces great erethism in the gastro-intestinal mucous membrane, and it may be of itself sufficient to develop the disease in question. It is, doubtless, usually associated with some terrestrial emanation, of the nature of which, however, we know nothing. It differs, probably—as already remarked—from that which occasions intermittents, as the latter does from that which is concerned in the production of goitre, pellagra, and other diseases that are endemic in particular situations. As in the case of intermittents, the vegetable and the animal kingdom have been looked to as furnishing the emanations that produce remittents. Perhaps they may be concerned. There seems, at least, to be more probability that they are causes of remittents than of intermittents. Under the influence of high atmospheric temperature, acting in the manner above described, such emanations may be concerned in their causation. In ships proceeding from torrid climes, the disease has broken out under circumstances, which could not easily be explained under other suppositions. On our wharves, too, it has appeared to be caused in a similar manner. Cases of this kind we shall have to refer to under the head of Yellow Fever.

In the bills of mortality for the city of Charleston, we notice cases of '*country fever*,'—which means the febrile attack that follows within a short time, and, according to Dr. Dickson, with appalling certainty, an exposure to the concentrated malaria of the low country in the immediate vicinity of the city. "To sleep a single night upon his plantation, involves the southern agriculturist in the most serious danger; nay, he is not safe if he indulge himself in frequent visits, even by day, to his rice fields, or inhale too often, under any circumstances, the pestilential air from swamps and marshes."

Endemico-epidemic fever would seem, under favourable atmospheric influences, to be generated by animal decomposition. Some interesting cases of the kind were communicated, not long ago, to the author, by Dr. William Maxwell Wood, of the United States Navy. They occurred in a small coral neck, of twelve acres extent, called Indian Key, at the southern extremity of Florida. Its surface, with the exposure of a few insulated trees, presents a naked, white, clean exposure of carbonate of lime, and there is not on the Key a natural receptacle for water as large as a washhand-basin.—rain being collected in cisterns for the use of the inhabitants, who number from 50 to 60. The houses, which have all been erected upon the plan of a single proprietor, are neat, new, one-story cottages, separate from each other, raised two or three feet from the ground on stone supports, and ranged around the island, facing the ocean, with a large open space behind them; the breezes from the sea having a clear sweep over the Key, and through all the buildings. There is nothing to

generate vegetable miasmata and the place is remarkably free from disease. Thirteen men, in charge of an officer, were quartered in two of these cottages. Some weeks afterwards Dr. Wood found the officer and one of the men under violent febrile disease. Subsequently two others were attacked. Three of these cases proved fatal, under excessive encephalic disturbance. The other men, with their baggage, were removed on board ship; but, amongst them, several cases appeared, marked by cerebral oppression, nervous agitation, and but little disposition to reaction; intense pain in the head, back, and limbs; the skin and conjunctiva assuming from the third to the fifth day a very yellow tinge. The disease likewise exhibited itself amongst those who had simply visited the houses on shore, and, in these cases, it presented a different type, the tendency to reaction being greater, and the grade of fever much higher. All the phenomena of the disease—Dr. Wood remarks—were such as he has seen resulting from the influence of “marsh miasmata,” in its various degrees of action, from the condition of overpowering congestion, seen in the *cold plague* of the Mississippi, to the symptoms marking the yellow fever of the Southern States and the West Indies. An attentive examination of the house, although it indicated a want of cleanliness, showed no accumulation of decomposed vegetables anywhere; but there was an oppressive animal, jail-like smell, which seemed to emanate from the houses themselves. There had been much and continued intemperance amongst the men, and part of a barrel of spoiled salt beef, which was very offensive, had been covered with fresh brine, and served out as the men’s rations. This beef was stowed in one of the out-houses, and had been just consumed when Dr. Wood arrived at the Key.

These were all the facts that could be collected during the researches into the cause of the disease. The points in this singular endemic-epidemic, which were striking, are:—the entire absence of general or local vegetable miasmata; the concentration of the poison, as seen in the prostration of the powers of life; the very short exposure to its influence required to generate the disease; and its insulation, there being no case among the inhabitants of the Key, although the neighbouring cottages were occupied.

In sporadic cases of remittent fever, both of the simple and the malignant kind, malarious influence may not, perhaps, be necessary to engender it. It may be sufficient that gastro-enteritis is induced, in order that, under favourable circumstances, it may assume the remittent form. The *infantile remittent fever* of authors is an affection of this kind. It is a febrile disorder, which is generally found to depend on irritation, inflammation or ulceration of the mucous membrane of the digestive tube.

**Pathological Characters.**—These are very various; but they are chiefly met with in the stomach, liver or brain; predominating in one organ rather than another, in accordance with the symptoms during life. Hyperæmia is almost always present, and, usually, there are marked signs of inflammation. Gastro-enteritis usually exists, and, not unfrequently, the follicular form, or what has been termed *dothinen-teritis*.

Under another head, it will be stated, that this last form of enteritis prevails chiefly in typhoid fever; but still it is met with in the remittent form. The researches of one of the author's colleagues in the Philadelphia Hospital, Dr. Gerhard, have led him to pronounce, that the "anatomical character" of the malignant remittent and intermittent fevers, which sometimes occur in the malarious parts of the country that are situate within a short distance of Philadelphia, and probably also in the Southern States, is to be looked for in the spleen, liver and stomach; and he thinks, that "the bilious and remittent fevers are probably referable to the same class as the malignant remittents." The glands of Peyer and the other intestinal follicles, he found perfectly healthy. The results of Dr. Gerhard's observations do not, however, accord altogether with those of the author; and the discrepancy is probably owing, in part, to the difference presented by the remittents of various years. No matter what may be the form of fever, however, provided there is diarrhœa and meteorism, we need not be surprised to meet with follicular enteritis to a greater or less extent. The Baltimore Infirmary formerly afforded, and probably still affords, a good field for the observation of those affections; and nothing was more common, in fatal cases of remittent and intermittent fevers, than to observe inflammation, or evidence of its having previously existed, in the mucous membrane of the small intestine, and in the follicles belonging to it. "As far back as 1822," observes a colleague of the author when he was professor in the University of Maryland, Professor Geddings, of Charleston, "we had occasion to recognise the enlargement and inflammation of the intestinal follicles of an infant, who died of an attack of autumnal fever, on the second day after the attack, in consequence of the supervention of convulsions. We have repeatedly met with it in those who had died at an early period of bilious remittent, yellow and typhoid fevers; and wherever fever, whatever may have been its primary form, has been protracted, we do not remember to have seen a case in which some evidence of follicular gastro-enteritis, either in form of enlargement of the follicles, punctuated redness, extravasation, &c. did not exist; obscure in some cases, it is true, but always sufficiently apparent when the intestine was fairly laid open, carefully cleansed, and held between the eye and a strong light, or examined with a magnifying glass." Such must likewise have been the results of the observation of Professor Jackson, of Philadelphia, who speaks of "follicular enteritis known more familiarly under the names of typhoid fever, typhoid remittent and bilious fever;" and follicular gastro-enteritis is declared by Professor Paine, of New York, on the authority of Professor Stevens, and of Dr. Vaché, physician to the Bellevue Hospital, to be notoriously of common occurrence in the bilious remittent fevers of New York. Dr. Swett states, that the opinion prevails in New York, that inflammation of the glands of Peyer occurs in cases of remittent fever, an opinion which, he says, has been strengthened by the results of examinations by Dr. Richardson, resident physician to the New York Hospital, who published in the *New York Journal of Medicine* for 1841, six cases of remittent fever, in all of which, on dissection,

the glands of Peyer were found to be affected. Professor J. P. Harrison, of Cincinnati, has affirmed, that inflammation, terminating in ulceration, is a frequent sequel of protracted attacks of bilious remittent fever, and that the ulceration is commonly found in the glands of Peyer at the lower end of the ileum; and Dr. Dickson, of Charleston, states, that, in protracted cases, follicular ulceration may be found throughout the whole extent of the bowels.

An accurate observer, Dr. Stewardson, of Philadelphia, found on the examination of those who died under his charge as physician to the Pennsylvania Hospital, during the years 1838, 1839, and 1842, lesions of the spleen and liver in every case, and development of the glands of Brunner in the duodenum; and he considers, that their frequent enlargement and uniform distinctness constituted a striking peculiarity of the disease: the stomach likewise was very frequently inflamed. In the cases, observed by him, the essential anatomical characteristic of the disease appeared to be the morbid condition of the liver, which was found to be flabby, of a bronze colour,—the two substances blended together so as to be scarcely distinguishable: the spleen was much enlarged and softened.

Dr. Swett, in five cases, observed in 1844, found the peculiar condition of the liver, which Dr. Stewardson regarded as the essential anatomical characteristic of the disease; and similar appearances were observed in three cases seen by Dr. Power, of Baltimore, and in one examined at the Baltimore Almshouse by Dr. Wm. T. Howard; Dr. Swett does not accord with Dr. Stewardson in the disposition to believe, that inflammation of the mucous membrane of the stomach and duodenum is an important and frequent feature of the disease. Most of the changes, which he noticed in the mucous membrane of the stomach appeared to him to be of a chronic character, and probably long antecedent to, and entirely independent of, the acute disease. Nor was he able to confirm Dr. Stewardson's remark, that traces of inflammation exist in the mucous membrane of the duodenum, or an enlarged condition of the mucous follicles. Under present evidence, therefore, the appearance of the liver described by Dr. Stewardson cannot certainly be regarded as an anatomical characteristic of remittent fever. The phenomena, as regards colour, are indeed strikingly discrepant in cases recorded by himself, and the same remark applies to those published by Dr. Swett; and *à fortiori* to those by Drs. Anderson and Frick, of the Baltimore Almshouse Infirmary, in one of whose cases the liver was externally "of a light brownish pink;" and in another "of a brownish yellow colour resembling incipient cirrhosis," yet they have all been considered to be confirmative of Dr. Stewardson's deductions. Dr. W. M. Boling, of Alabama, whose attention was especially directed to the liver, partly by the observations of Dr. Stewardson, affirms, that he has been able in but a very few instances to find any alteration of it; and even where such did exist, "a slight exertion of the imagination would have perhaps been necessary to trace a close resemblance between them and the descriptions of Dr. Stewardson." In a large proportion of cases the organ, so far as he was capable of judging, was entirely healthy.

In the remittent fevers of India, according to Mr. Twining, examination after death shows, that they are almost invariably connected with local hyperæmia, which often runs rapidly into inflammation, attended with much interstitial effusion. The seat of these local affections is principally the stomach, intestines, and glandular structure about the duodenum, and at the root of the mesocolon, especially where it passes across the spine: the principal disease likewise often found in the spleen, liver, brain or lungs. There is a great diversity in the relative degree to which the local affection extends. Sometimes, the brain and stomach seem to be almost exclusively affected; in other cases, the spleen, intestines and lungs; and, in others, the liver.

Such are the main appearances met with in those who have died of remittent fever; but it is obvious they must suffer almost *ad infinitum*. In a disease attended with so much irregularity of the functions of innervation and circulation, and implicating the general system, there is scarcely an organ, which may not give evidences of hyperæmia, if not of active inflammation.

Where such numerous opportunities exist naturally, in the southern and western portions of this country, for investigating the anatomical characters of our remittent fevers, it is to be regretted, that they are so rarely embraced. A fine field is afforded for the enterprising pathologist, and we doubt not, that if it were cultivated, distinctive differences, analogous perhaps to those pointed out by Dr. Stewardson, might be discovered, which would shed light on the pathological characters or accompaniments of this interesting fever.

As in other febrile and inflammatory diseases the blood becomes modified in its characters, and the view has been maintained that remittents originate in a disorganized state of this, as indicated by its black crimson colour, which Dr. Stevens considers to be owing to the entire removal, or great diminution, of its ingredients. This altered condition of the blood, he thinks, induces a morbid modification of the action of the solids as certainly as fever is excited by the injection of a putrid and poisonous fluid directly into the blood-vessels. The altered condition of the blood cannot be contested; it may admit of question, whether it ought to be regarded as the link in the chain of phenomena.

**Treatment.**—In the very severe forms of remittent fever, that occur in the southern regions of this country, and in the most torrid climates generally, the gastric complication is usually extremely urgent, and the stomach is frequently so irritable as not to bear emetics or cathartics. Bloodletting has been found, in several cases, beneficial, especially where the arterial reaction was very violent. One efficient bleeding, employed early, has checked prompt and excessive irritability of the stomach and the retching. After this, sinapisms may be applied to the epigastric region. Ice is so efficacious in this respect; as well as the effervescing draught, composed of cold soda-water. For forming the effervescing draught, the effervescent soda powders will be found to answer every purpose. Limonade and milk, and all the ordinary remedies for checking vomiting, have also been used. Counterirritants applied elsewhere—as sinapisms to the calves of the

legs—have likewise been found to diminish speedily the irritability of the stomach.

In all cases in which bloodletting is practised, it should be done early; as very material changes are apt to supervene rapidly in the tolerance of patients is to this remedy. In the remittents of India, the most important feature is the rapidity with which changes take place, both in the disease, and in the powers of the constitution, even in the course of one paroxysm; and, according to Mr. Twining, the treatment, which, if employed at an early stage of the accession, would be judicious, and afford not only immediate relief, but tend greatly to moderate the violence and alter the character of succeeding paroxysms of the disease,—if employed later in the paroxysm, would be liable, in many cases, to destroy the patient in two hours, nay, sometimes in a few minutes. After the first or second paroxysm, general bleeding has to be practised with caution; but, at any time,—if the violence of arterial action appears to be considerable, and augmenting,—leeches may be applied to the epigastrium, and, if the head suffers materially, to the temples.

It appears to be the opinion of the generality of writers, who have witnessed remittent fevers in their greatest malignity, that large doses of calomel are necessary,—according to most, owing to the liver being generally congested, torpid or otherwise deranged to a great degree; and consequently our remedial efforts should, in their view, be particularly directed to that viscus; but, can we have any reason for believing that calomel or any other agent can act on a “liver, congested, torpid or otherwise deranged;”—in other words, be a specific in all affections of the liver? In this country, and in India, large doses of mercurials are administered, not so much with the view of inducing violent catharsis, as to make the new impression upon the system, which is peculiar to mercury; and under this new pathological condition, the morbid train—as in many other maladies—may be broken in upon. Dr. Dickson, of Charleston, declares it to be his deliberate conviction, after the experience of a quarter of a century, that when the mercurial action has been established in the system, the original disorder is “in an infinite majority of instances subdued, supplanted, and made to disappear;” and he adds, that under this plan of cure, “there is much less liability to relapse, as it is called, of the remittent, or to the pertinacious infliction of an intermittent visitation.” The liver, not exclusively, but along with the other secreting organs has its functions modified, and it is probably by this revellent action, that benefit accrues in remittent fever as in other analogous disorders. To make an early and decided mercurial impression upon the system, it is generally advised, that calomel should be given in large and frequent doses,—twenty grains, for example, every four or five hours;—and that it should be continued, until the gums exhibit its influence, or the evacuations become conspicuously bilious. Should it not prove cathartic, any of the gentle cathartics, recommended under the head of simple remittent fever may be employed in addition.

In these severe forms of remittent fever it is admitted, that the ordinary diaphoretic remedies are of little or no advantage. It has

been already remarked, that in the simpler form, but little dependence should be placed upon any except the refrigerant class. In the severer grades under consideration, cold or cool drinks,—soda water in ounce bottles kept cold, or the ordinary soda powders, may be allowed; or lemonade, tamarind water, and similar acidulous and cooling mixtures.

In some of the graver remittents, the employment of antiperiodics has appeared to be injurious, and has, consequently, been reprobated by many practitioners. Perhaps, however, some of the evils may have resulted from the administration of the cinchona in substance. Since the discovery of the quinia, we have been in possession of a remedy which disagrees less with the stomach and bowels; and on which great reliance has been placed in the severe remittents of the south and west of the United States. Overwhelming testimony in its favour has been given by Drs. Ford, J. B. Porter, Wm. M. Boling, Wm. A. Van Buren, McCormick, T. D. Mitchell and others. The last-named gentleman, indeed,—in too hasty a generalization under present evidence, we think—lays down the position, that all fevers “possess one common property, which, confessedly under the control of the sulphate of quinia in the case of common ague and fever, is not less so in typhoid, typhus, congestive, yellow, and—it may be—all the fevers named in the books,” and he assumes the position, “plainly and boldly,” “that there is but one feature or element in either of the fevers named, that is essential to its pathology, and that feature or property or element bows before the potent sway of the sulphate of quinia, and for this reason only we cure the patient.” Where there is any visceral hyperæmia, the sulphate of quinia may be productive of no advantage, even when the remission is great; but in such case no agent would be of service, until the hyperæmia was removed; but it by no means follows, that it would prove injurious. In all such cases, it must be given in large doses, and at short intervals, so as to make a decided impression, and prevent the recurrence of the exacerbation. Such is the plan found effective in the malignant remittents of India. It must be borne in mind, too, that even in the less severe cases, the prompt exhibition of sulphate of quinia, by arresting the recurrence of the paroxysms, may prevent those visceral diseases, and the impaired state of the constitution, with debility, which are often met with in protracted cases. Life, says a modern writer on the remittents of India, Mr. Twining, often depends on the management of a single paroxysm, by the judicious employment of the lancet, a purgative, and two or three large doses of sulphate of quinia. In a case of severe remittent, which fell under the care of a respectable practitioner of this country, Dr. Thomas Fearn, of Huntsville, Alabama, three teaspoonfuls, weighing thirty-two grains, of sulphate of quinia were given at a dose; and, at the end of an hour, there was a diminution of the frequency of the pulse,—the invariable effect, Dr. Fearn observes, of large doses of quinia, when its operation is favourable. The dose was repeated, and, at the end of another hour, it was again given,—making ninety-six grains in two hours. Dr. Fearn states, that his usual practice in remittent fever has been to give three doses of twenty grains each, with

an interval of an hour between. A similar practice,—as remarked hereafter,—was successful in the epidemic yellow fever, as it prevailed to the south in the year 1839. These doses are, perhaps, larger than necessary, but they establish the value of the remedy, and the importance of seizing hold of the earliest remissions to administer it. In India, it is given in much smaller quantities, and it is probable, that five or ten grains, administered every hour, during the remission, would be sufficient.

In the congestive fever of the Western States, when once reaction has been established, Dr. Charles Parry, of Indianapolis, has found sulphate of quinia *the* “remedy,” “the master article of the *materia medica*,” and such has been the result of the experience of others.

Throughout the disease, tranquillity both of body and mind should be enjoined; and barley-water, gum-water, or gruel may be directed; with the farinaceous preparations,—as arrow-root, or sago, as the disease advances and the powers fail. When adynamia is considerable, it has, of course, to be met in the same manner as when it follows other febrile diseases, always bearing in recollection the great tendency of the disease under consideration to induce hyperæmia, and serious mischief in certain of the internal organs.

During the period of convalescence, mild tonics,—as the cold infusion of cinchona, the infusion of gentian, calumba, &c.—are advisable, and, indeed, the whole therapeutical and hygienic treatment, that appertains to convalescence from other severe maladies. Great attention, in this respect, is demanded, especially as in the autumnal months there is a strong tendency to relapse. This, according to Dr. Dickson, is more to be apprehended when the digestive organs remain weak or oppressed, with a furred or red tongue, and a bitter taste in the mouth.

In some of the western parts of the United States a disease prevails, termed *Milk-sickness*, *trembles*, or *sick-stomach*—of the nature and causes of which there is much difference of sentiment; some, as Dr. N. Crookshank, of Ohio, denying that it is a distinct disease, and regarding it as a form of gastro-enteritis; others considering it to be nothing more than an autumnal fever of a congestive type, attended with great irritability of the stomach. Thus far, the causes would seem to be wholly unknown; but, according to Professor Drake of Louisville, it would appear, that in the state of Ohio, transforming the surface of the infected districts by the hand of art has been found infallible.

The disease is considered to be produced in man by eating the flesh of animals that are infected with it; and it is affirmed by Dr. G. B. Graff, of Illinois, that butter and cheese, manufactured from the milk of the diseased animal, are the most concentrated forms of the poison, although they may possess no appearance, smell, or taste, which distinguish them from the healthy article.

It is the opinion of Professor Drake, that an undue importance has been attached to the disease. “The mortality from it is very small, compared with that from many other maladies, about the causes of which we make few inquiries. There can be no doubt, that



more persons annually die in the West, from autumnal fever, than have died of milk-sickness, from the commencement of its settlement. Even in the districts where the disease is endemic, it does not destroy as many as pleurisy or cholera morbus."

The *treatment* which has been found most effective has been that required in remittent fever, subjected to modifications that may suggest themselves in the course of the disease.

### 3. *Hectic Fever.*

SYNON. Febris hectica, Epanetus hectica, Hectica, Amphimerina hectica, Febris lenta, F. phthisica, Hectopyra, Hecticopyra; Fr. Fièvre hectique, F. étique; Ger. Zehrfieber, Schleichende Fieber, Abzehrungsieber.

This form of remittent fever is best known as one of the concomitants of pulmonary consumption. It is not, however, peculiar to that disease, but occurs wherever there is extensive suppuration, or serious derangement of structure or function persisting for any great length of time. Thus, it exists in tuberculosis of the lungs, when it has proceeded to the state of softening; and in diabetes, where there is no important structural derangement, but a very extensive modification not only in the functions of the kidney but of the whole system of nutrition. Hence, the extreme emaciation which always attends it, and which has probably given origin to its name, (from *ἐσθίω*, "I consume,") although it is generally considered to be derived from *ἕξις*, "habit of body," or *ἐπιτικός*, "habitual."

Hectic fever may be regarded as in most cases symptomatic. Instances, however, do occur, which cannot be explained by any appreciable lesion of the solids or fluids. M. Chomel saw two cases of decided hectic, which proved fatal, without any pathological appearance after death, that could account for the phenomena. As it occurs in diseases of very different organs, it requires a distinct consideration.

**Diagnosis.**—Hectic fever rarely presents itself unless where there have been previous signs of considerable structural or functional derangement; hence, it is always attended with great and progressively increasing debility. At first, it is generally obscure; but uncertain chills are experienced, which are followed by febrile flushings and exacerbations;—the pulse being usually very frequent, varying between 90 and 120; and always extremely excitable, so as to be rendered more frequent under the application of very slight exciting causes. These exacerbations are accompanied by a burning sensation in the palms of the hands, and the soles of the feet; and they are readily induced by slight causes of excitation, as by meals, especially breakfast. According to Sir Charles Scudamore, the heat in tubercular phthisis reaches to from 99° to 104°, and in some instances of acute phthisis—hectic fever being extremely urgent—he has found it as high as 105°. The most marked increase is usually in the evening, at which time, the face is observed to be suffused with a circumscribed flush, which has been called the "hectic flush" or "glow." At this period, there may be more or less disturbance of the digestive function, as indicated by want of appetite, foulness of tongue, and constipation of the bowels; but, frequently, the general sensations are

little affected, with the exception of the sense of debility, which becomes gradually more and more considerable.

As the disease, which gave occasion to the hectic, becomes more and more developed, the exacerbations become more continuous, until, at length, the patient is rarely free from febrile movement: marked exacerbations, however, occur once or twice in the course of the day, and usually at about the same period; the most severe taking place in the evening, which attains its height about midnight, and passes off, by sweating, early in the morning. Often, however, the evening exacerbation, in true hectic, is scarcely indicated to the patient by more than heat in the palms of the hands and soles of the feet, and by the copious sweatings which take place in the morning, and are termed "night sweats:" the medical observer does not fail, however, to detect the hectic flush and the other functional phenomena, that indicate the existence of this fever.

It was the opinion of Dr. Cullen, that another paroxysm in the forenoon is an essential character of hectic. To this he was probably led by the idea, which he, and many others, entertained, that the healthy circulation is subject to a double diurnal excitement. From observations, since made, it would seem that, independently of incidental excitement, there is but one diurnal revolution. Dr. Knox found that the pulse is more frequent and excitable in the morning on waking; that it gradually becomes less so towards evening; and that its greatest state of depression is about midnight, or before going to sleep. These observations have been repeated, but instead of finding actual excitement of the pulse in the morning, Dr. Christison found only very marked excitability. Under a careful avoidance of all accidental stimuli, such as food, exercise, mental excitation and the like, he discovered no difference whatever either in the pulse or animal heat, in the course of the whole day and night; but, on awaking in the morning, the excitability was so great, that trifling stimuli raised the pulse and temperature considerably; after midday, this excitability gradually decreased, and, towards midnight, it was lower than at any previous period. It is remarkable, therefore, as observed by Dr. Christison, that the ordinary period of greatest excitement in hectic fever, continued fever, and many other febrile diseases, occurs precisely at the time when there is the least excitement or excitability in the healthy state of the functions.

When hectic fever is fully developed, it is a true remittent; the patient, between the exacerbations, giving evident signs of the presence of fever; but, frequently, the apyrexia is so complete, that it has been mistaken, and treated for intermittent. Of this occurrence the author has met with numerous examples. In the majority of cases, there is no manifest chill, however, but the hot and sweating stages are distinctly marked. In long-protracted hectic, the functions of the digestive canal, which had been disturbed at first, are subsequently performed with greater vigour than many others; but, at a late period of the disease, the mucous membrane frequently exhibits evidences of inflammatory action; that of the mouth becomes aphthous; the stomach is, at times, irritable; and a colliquative diarrhœa is the evi-

dence, if not of ileitis, of inflammation of some portion of the inner coat of the intestines. This—as stated under another head—usually occurs when the disease, which gave rise to the hectic, is about to terminate fatally; but it is not essential to hectic, and, indeed, in that which accompanies pulmonary consumption, is far from being always present. At this advanced period, there is usually a pale exanguious condition of the whole of the cutaneous surface, a pearly appearance of the white of the eye, blanching and incurvation of the nails; and, during the exacerbation, the face has the circumscribed and characteristic flush. In the augmenting debility, the legs are apt to become more or less œdematous, as in other protracted diseases, accompanied by great emaciation. The intellectual faculties generally remain unimpaired until towards the close of the disease, and it is affirmed that the sexual desires are rather augmented. In every form of hectic, not accompanied by severe bodily suffering, the patient is commonly unaware of the nature of his situation, and buoys himself with hopes of recovery almost to the last; laying plans, in many instances, for the future, on the very day that terminates his existence.

Usually, the disease persists for a long period owing to the less intensity of the lesion that causes it; but, at times, it is frightfully severe and rapid,—in those cases of pthisis, for example, which are commonly known by the name “*galloping consumption*.”

**Causes.**—Unquestionably, hectic fever is most frequently observed along with organic diseases that are accompanied with the secretion of pus, as in pulmonary consumption, purulent effusions from chronic pleuritis; lumbar abscess, &c. &c. It has often been noticed, that where large collections of purulent matter have formed, and been discharged by the surgeon, febrile irritation of the kind in question, has rapidly supervened; yet little or no irritation may have been present before the matter was evacuated, and when it could have been readily taken up by the venous or lymphatic absorbents. It was, accordingly, supposed—at one time, universally—that the irritative or hectic fever is the result of the debility induced by the discharge of the pus. It is obvious, however, that from the time the pus was secreted, it must have been as extraneous to the vital operations as after its discharge. The removal of that which was already separated from the sphere of the vital actions could not add to the existing debility. The true cause of the hectic, set up in such cases, and present to some extent from the moment that extensive suppuration begins to be established, would seem to lie in the circumstance, that when once the pus is discharged, a recuperative effort takes place in the system of nutrition of the inner paries of the cavity, and the severe irritative fever, which ensues, is owing to the constitution sympathizing with the irritated capillaries, and to such an extent, that the system too often sinks under the effects of its own reparatory exertions. No one, at the present day, believes, that the consumptive are worn away by the purulent discharge that takes place from the substance of the lungs. Hectic fever supervenes in this case, as in every other, where extensive mischief exists, and great recuperative effort has to be exerted; and under the daily irritation of this fever, the spark is gradually extinguished.

As before observed, the existence of suppuration is not essential to the production of hectic. The author has seen it in cases of diabetes where there was no material organic disease of the kidney perceptible on dissection; and it accompanies chronic pleurisy and pneumonia, where there is no reason to suspect the existence of pus, and where, indeed, its absence has been subsequently proved on dissection. In a case of chronic pleurisy, referred to by Dr. Christison, the fluid in the chest was evacuated by puncture, in the confident expectation that purulent matter would be discharged; but the only fluid that issued was a serum of light density, in which fleecy strings formed on standing.

**Treatment.**—It is not necessary to say much on this head, as the treatment proper for hectic fever is detailed under other heads, and especially under that of Tubercular Consumption. Some general remarks may not, however, be inappropriate. It need scarcely be said, that depending, as it does, upon disease affecting some part of the economy, the main treatment must consist in due attention to the primary malady. It is not commonly so active as to require the vigorous employment of antiphlogistics. It can rarely be necessary to have recourse to blood-letting; and for this additional reason, that it usually accompanies morbid states, which require rather a corroborating than a reducing system of management. Where the skin, however, is steadily hot and dry, cathartics given occasionally, with the use of ice, and of cold or tepid ablu-tion to the arms and face, will be found to temper the morbid heat, and in this manner diminish the extent of the sweating stage. During this stage, the quantity of bed-clothes should be diminished so far as not to induce chilliness. On no account ought the perspiration—which is always more or less colliquative—to be encouraged. It is not necessary, however, to dwell upon the management of the colliquative sweats and diarrhœa, as they have been detailed at some length under the disease already referred to. In all cases, it need scarcely be said, where these and other symptoms arise in the course of a disease, the pathological condition that gives occasion to them must be inquired into, and be combated where practicable. Unfortunately, that pathological condition is too often irremediable; and the phenomena themselves have to be regarded as a part of the affection. Still, in the case of the diarrhœa of phthisis, by investigating the cause, we discover that there is more or less endo-enteritis, which may be combated by appropriate management, but generally with the result only of palliation, the disease proceeding not the less surely and steadily towards a fatal termination. “There is no case,” says Dr. Mackintosh, “in which the difference is so strikingly shown between routine practice and that which is directed by sound pathological views. The routine practitioner will be invariably found to treat some of the symptoms thus: Has the patient no appetite? Give him a tonic.—Is he purged? Prescribe an astringent.—Is he griped? Give him an opiate.—Is the urine scanty? He must have a diuretic.—Has he profuse perspirations? Let acid drops be exhibited?”

Opiates, in these cases, are generally valuable remedies. They allay irritation, and, at the same time, smooth the pillow of affliction,

favouring a euthanasia, which the humane physician is ever anxious to promote.

## SECTION III.

## CONTINUED FEVER.

SYNON. *Febris continua*, *F. continens*, *Enecia*, *Febris continua continens*; *Fr.* *Fièvre continue*, *F. continente*; *Ger.* *Anhaltendes Fieber*.

It was before observed, that the existence of continued fever has been denied; and that, in all cases, perhaps, exacerbations may be noticed, in the course of the twenty-four hours, or, in other words, that there are daily remissions; but, certainly, there are fevers in which these changes are by no means marked, and where the patient experiences an increase of the febrile symptoms from accidental causes merely. Cullen's definition of continued fever was—"Fevers, without intermission, and without being produced by marsh miasmata, but with remissions and exacerbations, though not always considerable, continuing; two paroxysms in each day." The definition of Cullen has been followed by others; thus, we have *Enecia* or "Continued Fever," defined by Dr. Good, as "one series of increase and decrease, with a tendency to exacerbation and remission, for the most part appearing twice every twenty-four hours;" whilst *Epanetus* or "remittent fever" is defined to be "strikingly exacerbating and remitting, but without intermission,—one paroxysm every twenty-four hours."

The division, adopted by Cullen, of continued fevers into *synocha* or inflammatory fever, *typhus* or fever of prostration, and *synochus*, which holds an intermediate position, although arbitrary, has been followed by many; but it is by no means sufficient; and although there is some plausibility in the affirmation of a distinguished writer of this country, Professor Rush, that it is "not more improper to say, that men are of different species, because some are tall and others short, or because some are long and others short lived, than that fevers are of different species, because they vary in their symptoms and duration," there is, nevertheless, not only convenience but philosophy in considering continued fever under a few distinct heads; for example, simple continued fever, typhus, typhoid fever, plague, and yellow fever. Dr. Billing has expressed a similar opinion to that of Dr. Rush,—"that there is but one simple fever, and which is exanthematous, petechial, though the rash may never be sensibly developed, as in scarlatina maligna; that it is continued, synochous, ('synocha,' *συνεχως*), whether with high or low pulse, high or low temperature; and that, when the sensorium is oppressed in addition, it is typhus."

There is great confusion in regard to the division of continued fevers; for whilst certain of the followers of the school of M. Louis—as will be seen hereafter—believe, that on the continent of Europe at least, there is but one fever—the typhoid; others admit typhus of the European continent; whilst others believe, that typhus only belongs,

in Europe, to Great Britain; and one of them—M. Grisolle—includes under the term “continued fever,” ephemeral fever, inflammatory fever, typhoid fever, typhus fever of England, bilious fever of hot climates, yellow fever, and plague: thus confounding what we consider to be distinct diseases, and establishing a division which can scarcely satisfy those who affirm, that if there be such a fever as the inflammatory, they have never seen it.

### 1. *Simple Continued Fever.*

SYNON. Febris continua simplex, F. continens simplex.

**Diagnosis.**—Continued fever commences usually in the same manner as the remittent. Commonly, there is more or less chilliness in the first instance; and, occasionally, at intervals until the fever becomes fully formed. To the chilliness succeed the ordinary symptoms of pyrexia, which continue for a longer or shorter period; at times, when the disease has been induced and kept up by accidental causes, for a short period, as in ephemera; but at others, for a longer time; having, in such cases, a definite duration,—a circumstance, which has always to be borne in mind—and a tendency to terminate in health, instead of in debility and death, as was supposed by Cullen and his school.

The symptoms of simple continued fever are essentially the same, no matter what may be the duration of the disease; but they may vary materially in intensity,—being sometimes highly inflammatory, whilst, at others, the phenomena that denote prostration of the powers may be more prominent. There are no evidences, however, of hyperæmia of any important organ, unless the disease should lose its simple character; and, indeed, the only danger that is to be apprehended, in cases of this form of continued fever, is the supervention of such hyperæmia. In all cases, the functions of innervation, circulation and secretion are in a morbid condition; but, with the exception of this condition, the actions of the general economy do not exhibit any very marked derangement, so that the disease may pass through its whole course without any necessity arising for a treatment directed towards any particular internal viscus.

The termination in health is always to be expected in the simple uncomplicated form of continued fever. There are cases, indeed, in which the patient would appear to have been worn out by the febrile irritation, and, under such circumstances, no distinctive pathological appearances may present themselves on dissection; but these cases are necessarily rare, for death does not often happen in this disease under any circumstance. The most common cause of a fatal termination—as in cases of remittent fever—is hyperæmia or congestion of some internal organ. Owing to the activity of the circulation, and probably also to the modified qualities of the blood, engorgement easily takes place in the capillaries of some organ, and this hyperæmic state passes readily, under the circumstances, into inflammation, which may become the cause of death; and as it almost always happens, that the capillaries of some particular organ or tissue are more liable at the time to take on a morbid condition, we may thus, as has been sug-

gested by M. Dubois d'Amiens, justify to a certain extent the expressions, *Febris pleuritica*, *Febris pneumonica*, &c., employed by the ancients. It is not necessary, however, to repeat what has been said on the secondary symptoms of continued fever. They have already been the subject of comment under the head of Remittent Fever, and what was said there applies equally here: the symptoms which indicate the existence of disease in the different viscera must be known from the study of those diseases. They are but little modified by the existing fever.

**Causes.**—Vicissitudes of temperature are generally and properly, perhaps, regarded as a common cause of continued fever. As before remarked, it rarely happens, that all the functions are carried on so harmoniously at any one time, that some one is not more liable than another to become disordered; and when such a predisposition to disease exists, on the application of an adequate exciting cause, local hyperæmia or inflammation may declare itself, if the predominance of morbid tendency exist in one organ; or the disease may be more general, if the morbid tendency be present in a number of organs. In this way, irregular applications of cold and moisture, and vicissitudes in the conditions of the atmosphere, may give rise to continued fever. It is a disease of the more temperate climes, in which those vicissitudes prevail; as severe remittent fever is more a disease of countries in which the atmospheric temperature, during the summer and autumn, is unusually elevated. In a paper on the statistics of fever in Edinburgh, during a series of nine years, Dr. Knox states, that the highest average number of cases occurred in the following months, and in the following order,—December, November, January, March; and that the lowest averages were presented by the months of February, August, and May.

It would seem, that age affords a predisposition,—the greater number of deaths from continued fever having been found in the London Fever Hospital to occur between the ages of 15 and 20; next between 20 and 25; and after this age the susceptibility would appear to diminish progressively. It would seem, too, that at the time of life when the proclivity to continued fever is greatest, and the mortality from it likewise most considerable, the general mortality is least. Of 500 cases, selected at the London Fever Hospital, the mortality was as follows:—Under 10 years, 14; 10 to 15, 40; 15 to 20, 118; 20 to 25, 84; 25 to 30, 73; 30 to 35, 25; 35 to 40, 39; 40 to 45, 30; 45 to 50, 29; 50 to 55, 14; 55 to 60, 12; 60 to 65, 6; 65 to 70, 9; 70 to 75, 5; 75 to 80, 2. It is proper to remark, however, that according to the statistical inquiries of one observer, Dr. A. S. Thomson, the period of life during which the highest ratio of mortality occurs from fever is from 40 to 50. The general mortality it is difficult to appreciate. In the varieties of epidemic fever, as it appears in camps, prisons, ships, &c., it is occasionally most formidable: in some cases, as high as 2 in 3. In Edinburgh, the mortality at all ages, according to Dr. Alison, is about one in nine and a half. In the different hospitals of Dublin, according to Dr. O'Brien, the mortality from the 31st of August, 1817, to the 1st of October, 1819, was about 1 in 22 nearly.

The highest rate for any single quarter was 1 in 15 ; the lowest 1 in 32. The average mortality during the same epidemic, in the South Fever Asylum at Cork, was 1 in 25.

It is not easy to appreciate, with any accuracy, the general causes of fever; but we may perhaps be justified in saying, that, under favourable predisposing influences in the organism itself, there is no morbid agent, capable of generating inflammation, that may not equally induce continued fever. The influence of locality in simple continued fever is not marked; but, wherever continued fever prevails epidemically, either in the typhoid or typhous forms, or is accompanied by great and unusual tendency to local complications, associated influences probably exist, which, partly owe their origin to the *constitutio aeris*—as Sydenham termed it—and partly to the condition of the locality. Thus, in districts, in which typhoid and typhus fever have never been known, and which have been celebrated for their general salubrity, devastating fevers sometimes arise, of which a striking example fell under the author's observation at the University of Virginia, in the year 1829. Without any evident cause, the students of that institution were attacked with typhoid fever in the winter season, which proved fatal in several cases, prevailed for a few months, and disappeared, without the practicability of assigning—after the most scrutinizing investigation—anything like a plausible reason for either its origin or disappearance; yet adequate physical causes, must have existed, and in a form of combination that may never recur.

Under the other forms of continued fever remarks will be made upon impure air, malarious influence and contagion as causes; they can rarely, if ever, be concerned in the production of the simple form. It has been presumed, that moral emotions ought unquestionably to be ranked as causes, and in impressible individuals, under the favouring circumstances before alluded to, it can be understood, that continued fever may be generated in this manner; but the event is probably very rare. When epidemic fever prevails in a community, the depressing passions may certainly have a share in the etiology. The effect of these on the different functions is, to render the system more susceptible of the morbid influence, and consequently, in all epidemic visitations, a serene and cheerful mind is one of the best prophylactics. This, and this only, would appear to be the reason, why physicians, more than any other persons in the community, escape those diseases. Their minds are occupied; their functions exerted energetically, and they withstand morbid influences, which might develop the disease in others less favourably circumstanced.

**Pathological Characters.**—In the existing state of our knowledge, it can scarcely be said, that simple continued fever has any distinct pathological characters. It is rare—as before observed—for persons to die of it; and, consequently, but few opportunities arise for making the necessary examinations. If the patient die simply from febrile irritation, there may be no evidences of disease. If from the supervention of some organic lesion, it will be detected. So much, however, that



applies equally to continued fever, was said on this subject under the head of Remittent Fever, that it is unnecessary to repeat it here.

In simple continued fever, the proportion of fibrin in the blood is diminished. This diminution was constantly observed by M. Andral in the prodromic stage of continued fever,—the amount in some instances, being no more than 1·6 parts instead of 3 in 1000. The proportion of red particles was found to have commonly increased,—and likewise that of the solid parts of the serum.

**Treatment.**—The same remarks are in many respects applicable to the treatment as to that of remittent fever. The great general principles of management are, indeed, the same in all fevers. At the commencement of an attack of simple continued fever, or of fever, which may, or may not, assume the continued form, if there be reason to believe, that it is owing to the presence of aliment improper by quantity or quality in the stomach or intestines, it is important to administer an emetic, and to follow it up by an ordinary cathartic: after which, if the affection be merely ephemeral, the patient—under confinement to bed and restriction to slop-diet—may be restored to health in the course of a day or two. Should epidemic fever prevail, there is no probability, that this treatment will cut short the disease, which will usually run its course in spite of every effort to arrest its progress.

The sentiments of excellent observers have differed much in regard to the practicability of cutting short continued fever: whilst Dr. Elliotson speaks of it as a frequent occurrence; others, as Messrs. Bright and Addison, think it occasionally happens; and others, again, as Dr. Geo. Gregory, regard it as so rare, that the hope of it cannot be made a foundation for rational treatment. It must obviously be difficult to say, in such cases, whether the fever that appears to be cut short, would have been “continued,” if the measures had not been applied, or whether it might not have been *ab origine* a case of simple ephemera. Certain it is, however, that the cutting short of continued fever must be looked upon as not of frequent occurrence. With the view of arresting the fever, it has been advised to administer a nauseating emetic, or to draw blood, or to adopt both plans at the same time; but when they are employed, it must be rather in consequence of special symptoms that indicate their use. In the mildest cases, which are altogether uncomplicated, it is but necessary, that the patient should be confined to bed, be put upon farinaceous or unirritating diet, with the occasional employment of refrigerants and mild cathartics; but if much synochal or inflammatory excitement prevails, it may be advisable to take away blood, partly with the view of moderating the febrile action, and partly, also, to prevent the occurrence of hyperæmia, or of inflammation. It must be borne in mind, however, that continued fever is a disease, which has a tendency to run a definite course, and, when uncomplicated, to terminate in health: blood should not, therefore, be drawn with the view of overpowering the fever, which is impracticable, but of moderating increased vascular activity; and care should be taken, in its repetition, lest the powers of the system be so far reduced by it, that under the resulting nervous

impressibility, liability to hyperæmia in some important organ may supervene, or the symptoms assume the adynamic form.

General bloodletting is rarely admissible, except in the first week of fevers, unless some organic complication should arise; and even then, in the majority of cases, greater advantage will accrue from the judicious application of cups or leeches. Throughout the whole course of the disease, the bowels, as in other febrile affections, should be kept open by mild cathartics daily. The perturbing system, animadverted upon under another head, is scarcely less objectionable in continued fever than in the remittent; but the retention of morbid secretions must be carefully avoided, in the early periods of the disease, by the use of any of the ordinary cathartics; and, in the latter periods, if judged proper, by enemata. In simple continued fever, the co-existence of gastro-enteritis, notwithstanding the assertions of the writers of the school of Broussais, is not common; and, consequently, less evil might result from the employment of therapeutical agents, which act specially upon that membrane than has been imagined by them; but their employment necessarily gives rise to much corporeal disturbance, which can scarcely fail to aggravate, rather than to mitigate, the febrile disorder.

In the latter periods of continued fever, when the violence of febrile irritation has, in some measure, passed away, and the diseased actions appear to persist as it were from habit, revellents applied to the cutaneous surface exert at times a salutary effect, by localizing that which had been general, and concentrating the disordered actions towards one point,—and that an unimportant point,—of the economy. The practice—as elsewhere remarked, (*Gen. Therap. and Mat. Med.*, 3d edit. ii., 238, Philad. 1846.)—which is pursued by some therapeutists, of attempting to derive from every organ that is incommoded by the irregular afflux of blood during fever, by the application of an epispastic, whenever symptoms of such partial afflux of blood present themselves, does not seem to be judicious. It is apt, in the early periods of fever, to keep up the irritation, and to add to the disordered movements, by the excitant irradiations, which blisters are known to induce, and which, in the opinion of M. Broussais, add to the intensity of gastro-enteric inflammation where it is present.

Under the tendency of the disease to run a definite course, and—unless disorganizing inflammation should supervene in some part of the organism—to terminate in health, the true method of management is to allay all irritations, wherever existent, as effectively as possible, and not to adopt any course, during the period of great excitement, which can augment them. But when the disordered movements have persisted until the period at which the disease ordinarily yields, and appear to be likely to be farther protracted, the application of revellents, which excite a new action in the system generally, or in some part of it, will frequently break the morbid chain and restore all to harmony. In this manner, probably, a blister often acts beneficially in such cases,—as well as mercury, carried so far as to affect the system, but short, if practicable, of inducing full salivation. It is not always easy, however, to affect the mouth where much fever exists;

and it has been maintained, that when we do succeed, it is an evidence, that the fever has abated, or is about to terminate,—not that the mercury has broken in upon the morbid association. “It would appear,” says a modern writer on fever, Dr. Tweedie, “that the febrile action forms a protecting power against the influence of mercury, as its action on the system does not take place till the fever subsides; hence, I always regard the early effect of mercury as a favourable circumstance in fever.”

In regard to the employment of refrigerants, and especially of ice, the same remarks are applicable as in remittent fever. It is one of our best febrifuges, and far superior to any agent in the class of reputed diaphoretics, all of which are extremely uncertain, and none of them other than indirect in their action.

When the disease runs into the typhous state, it has to be met by those agents, which are appropriate to that condition, and which are inculcated under the next head.

## 2. *Typhus*.

SYNON. *Enecia typhus*.

Typhus fever has generally been esteemed a variety of continued fever, characterized by great disturbance of the mental faculties. It is usually indicated by a small, weak and unequal, but usually frequent pulse, with great prostration of strength, and cerebral disturbance. It is continued fever in other words—accompanied by great cerebral irritation, and prostration.

By almost all the older writers, typhus was divided into two varieties—*TYPHUS MITIOR* and *TYPHUS GRAVIOR*;—the *first* constituting *Enecia typhus mitior*, *Typhus simplex*, *T. nervosus*, *Febris lenta nervosa*, *F. nervosa*, *F. putrida nervosa*, *F. hectica maligna nervosa*, *F. asthenica*, *F. adynamica*, *F. gastrica nervosa*, *F. continua nervosa*; Fr. *Fièvre nerveuse*; Ger. *Nervöse, typhöse, asthenische Fieber, Nervenfeber, Typhusfeber*; the “*nervous fever*” of most writers and of the people, and denoted by slight shiverings, heavy vertiginous headache; great oppression; peculiar expression of anxiety; nausea; sighing; despondency, and coma or quiet delirium;—and the *second* constituting *Enecia typhus gravior*, *Typhus carcerum*, *T. petechialis seu exanthematicus seu bellicus seu nosocomialis seu contagiosus seu carcerum*. *Porphyrotyphus*, *Febris putrida*, *F. petechialis*, *F. continua maligna*, *F. continens putrida*, *F. typhodes*, *F. putrido-gastrica*, *F. nautica pestilentialis*, *F. carcerum et nosocomiorum*, *Putrid fever*, *Jail fever*, *Hospital fever*, *Petechial fever*, *Ship fever*, *Camp fever*, *Spotted fever*, *Malignant fever*, *Malignant typhus*, *Eruptive typhus*; Fr. *Fièvre des hôpitaux*, *F. des camps*, *F. des prisons*, *F. pétéchiiale*; Ger. *Faulfeber*, *Faulige Fieber*, *Petechialtyphus*, *ansteckende Nervenfeber*, *Fleckfeber*, *Petechialfeber*, *Kriegspest*; attended generally with rigors and heat alternating, with little or no perspiration; pulse tense and hard, usually quick, but fluttering; pain over the forehead and vertex, delirium, succeeded by stupor; signs of incipient putrescency,—petechiæ, vibices, hemorrhages, &c. Of late years, more especially, it has been attempted to be shown, that there are two distinct forms of fever, to one of which the epithet *typhoid* may be given; the other being the true

*typhus*; that these differ essentially from each other in their anatomical characters;—typhoid fever being connected with, if not dependent on, an inflamed or ulcerated condition of the follicles of the intestines; whilst, in the true typhus, there is no lesion of follicles; and the disease is contagious, whilst the other is not. There is, however, great confusion amongst writers on this matter, which it is not easy to disperse: thus, a modern writer, Dr. Roupell, considers an epidemic typhus, which he has described, to have been owing to a specific cause; as, when closely observed, it was found to pursue a definite course, passing through its stages with regularity, spreading by infection, and being marked in its progress by a distinctive rash. He, consequently, refers it to the genuine exanthemata of authors, the characteristics of which it possesses;—yet Dr. Roupell evidently describes the affection, to which many recent observers would apply the term *typhoid*, and which they regard as a distinct disease. It is unfortunate, indeed, that the term *typhoid* should have been applied to any distinct form of disease, inasmuch as it has been generally employed to indicate a condition of adynamia and encephalic disturbance, which may occur in many diseases, rather than to indicate any separate affection. The same remarks apply to the word "*typhus*," which has been used very indefinitely by medical writers; but, by the laity, the idea of a malignant contagious disease is always associated with it.

**Diagnosis.**—The symptoms, usually ascribed to typhus, are the following:—Commonly, there are distinct prodromic symptoms, similar to those that foretell the onset of other forms of fever—as prostration, or languor and lassitude, with a sense of general indisposition, troubled sleep, and more or less gastric disturbance. This latent period—as it may be termed—may last for a few hours, or for several days; and for some time after the application of the exciting cause or causes, there may be no functional disturbance whatever. In other cases, where a severe epidemic typhus prevails, the disease sets in without any evident prodromic phenomena.

At the very commencement, the symptoms may be inflammatory, so as to suggest the idea of synocha rather than of typhus; the pulse may be full and bounding, and the skin hot and dry; without, perhaps, much encephalic disturbance. The author has found the thermometer rise as high in epidemic typhus, at the commencement, as in scarlatina. In several instances, it has marked 106° of Fahrenheit's scale. This train of symptoms rarely continues beyond three or four days, when the symptoms of high febrile excitement diminish, and those that particularly characterize typhus, and give it the name "*nervous fever*," set in,—as anxiety, restlessness, delirium, and tinnitus aurium. As in other forms of fever, already described, the symptoms are increased in violence towards evening, and, in the morning, there is usually more or less remission: as in almost all forms of continued fever, and still more in the remittent, there is frequently, also, an augmentation of the morbid phenomena every other day, so that the patient has—to use the common expression—a better day and a worse. Occasionally, even during the first days of the disease, the skin—which is commonly hot and dry—is bathed with a profuse perspiration, and these cases have been found, at times, to be

extremely tedious. Often, partial irregular sweats, of short duration, occur, which afford no alleviation to the symptoms. The bowels are generally constipated; and the countenance is of a dingy hue, flushed, and peculiarly expressive of great languor and oppression. The eyes are somewhat injected, watery and heavy, and the whole expression is considered so characteristic, as not to be easily mistaken by a practised observer. Usually, about the end of the first week—sooner in some cases than in others—the typhous symptoms augment. There is more manifest stupor, and, at times, deafness, with frequent sighing, and brief and impatient replies, if the patient be questioned. The eyes are suffused and filled with tears; the nostrils obstructed by adhesive mucus; the lips dry and chapped, and the teeth and gums covered with dark sordes: the tongue is brown, dry, and often, also, chapped, which, in part, prevents the patient from protruding it readily. The state of the tongue varies, however, materially, and cannot, perhaps, be regarded as a correct index of the condition of the intestinal canal, although it may throw important light on the general state of the system. “You may have extensive disease,” observes Dr. Stokes, “with a natural tongue, and you may have a morbid state of the tongue without any appreciable intestinal lesion. You will often see, in the advanced stage of fever, a red, dry and chapped tongue become pale, moist and smooth, under the use of wine, carbonate of ammonia, and other stimulants; and yet in such cases, if you were to judge by the tongue alone, you would say, that there was inflammation of the intestines, and that the employment of stimulants was dangerous; and, indeed, if it was ordinary inflammation, we know that it would be exacerbated by stimulants.”

At times, in the course of typhus, but by no means so frequently as in typhoid fever, there is diarrhœa, with meteorism and tenderness on pressure; but, generally, there is little or no abdominal complication of the kind.

As the disease advances, the prostration becomes more and more pronounced, the complexion more dingy, and the tongue darker and drier. The signs of enfeebled innervation are very marked. The patient lies upon his back, entirely listless and unable to prevent himself from sinking down in the bed; the hands are affected with tremors, and the muscles with subsultus. When asked to protrude the tongue, he is incapable of doing so; or, if capable, cannot hold it steady. Usually, too, there is low muttering delirium or coma. The eye is dull and without expression, and the evacuations are passed involuntarily,—at first, only when asleep, but subsequently when awake. At this period, hemorrhage not uncommonly takes place from some of the outlets, accompanied or preceded by petechiæ or vibices. Most frequently, the hemorrhage is from the bowels; but, occasionally, from the nose, stomach or urinary organs. Under these symptoms, the patient becomes more and more enfeebled, and, in fatal cases, death takes place, preceded by the functional phenomena noticed in all affections attended by great adynamia. To one phenomenon, not unfrequently seen when fever is accompanied with encephalic disturbance—contraction of the pupil—Dr. Graves has drawn especial attention. “Were I called,” he observes, “to a case

in which every other symptom was favourable, but great contraction of the pupil was present, I would say, that it was a case of extreme danger. A tendency to even moderate contraction of the pupil is a very dangerous symptom in typhus; but a pupil extremely or permanently contracted, or, as it has been called, a *pinhole pupil*, is, or used to be, a fatal sign."

It can be readily understood, that the blood of a typhous patient may differ very materially from that of health, which may account for the associated purpuric and hemorrhagic conditions. It flows sluggishly from the vein, is of a very dark hue, coagulates loosely, and very rarely presents any buffy appearance. In the last stages of very severe cases, it coagulates so loosely as to almost resemble ill-made currant-jelly. Its chemical constitution is, likewise, materially changed, being much poorer in all its solid contents, but especially in the colouring matter, and saline materials. The salts and hæmosin have, indeed, been found by Dr. Clanny reduced to two-thirds of the healthy proportion. In regard to the petechiæ, a question has arisen, whether they be really dependent upon this altered condition of the blood, and its transudation through the coats of the vessel, or, whether they may not be esteemed of an exanthematous character. When they occur at an early period of the disease, the latter view, is, perhaps, applicable to them, inasmuch as there may be little debility; but still they may have their origin in the modified condition of the fluid of the circulation. They would appear, however, in no case to be more than incidents in the course of the disease, and in no way to influence its progress. When they are found at an early period, and are red and small, they are by no means of as serious import as when they occur at a later period, are very dark-coloured, large, and accompanied with hemorrhage from some outlet. Under such circumstances, they are of unfavourable augury.

It has been elsewhere observed, that the experiments of M. Andral on the blood in fevers have shown, that there is a tendency in them to marked diminution in the proportion of the spontaneously coagulable portion of the blood. This is very evident in the adynamic putrid forms of all fevers. In smallpox, in which the pustules were filled with blood; in scarlatina attended with hemorrhage from various parts; in patients affected with acute purpura hæmorrhagica, as well as in typhoid fevers accompanied with epistaxis and hemorrhage from the mouth, which augmented with the debility, he invariably found, that the blood was very poor in fibrin; and that this circumstance permitted more readily the escape of the red corpuscles from the vessels, and favoured the production of congestions in various organs, especially in the spleen, which is frequently found of increased size, with its cells filled with a matter of extremely diminished consistence. This M. Andral considers to be blood, deprived of a portion of its fibrin, and therefore not coagulating as usual, retained by some cause in the cells of the spleen. The tissue of the organ appears, in such cases, healthy.

In the singular variety of continued fever that prevailed in Scotland, more especially in 1843-4, Dr. Henderson, of Edinburgh, discovered urea in the blood and in the serous fluid of the ventricles of the brain,

in some of the patients who had been affected with cerebral derangement; and this fact has suggested the idea, that, as in cases of suppression of urine, sudden death in other affections may be owing to the presence of this substance in the blood. In two cases of fever, in Dr. Henderson's wards, which exhibited cerebral symptoms with diminution of the urinary secretion, urea was detected in the blood by Mr. M. W. Taylor. Dr. Henderson thought, that in one case the cerebral phenomena were relieved by diuretics accompanied by the use of appropriate remedies;—facts which ought to be borne in mind by the pathologist in his observation and management of fever cases.

In petechial typhus, according to M. Simon, the urine, during the first stage, is not very high-coloured; about the seventh day it frequently exhibits turbidity: during the nervous stage, it is of a dark-brown colour; and “at the period of the crisis,” sediments are also deposited. Dr. Robt. Willis states, that the urine in typhoid (adynamic) fevers, especially as regards its acid or alkaline reaction, may be studied with advantage, as affording an indication of the progress of the disease. During the early stage, it is acid; as the disease advances, it becomes neutral, and then alkaline; as the disease decreases, it again becomes neutral, and ultimately acid. The return to the acid state is regarded as always a good symptom. The observations of MM. Pelletan and Simon appear to accord with those of Dr. Willis.

It has been a question with some observers, whether typhus ought not to be classed amongst the exanthematous fevers; but the generality of pathologists are not disposed to place it amongst them. A recent writer, Dr. West, who commenced his investigations with a strong prepossession in favour of this classification, is of the negative opinion, and the chief facts on which he bases his conclusions are the following: *First*, The disease often occurs more than once during the lifetime of an individual. *Secondly*, The eruption is not invariably present. *Thirdly*, The eruption does not always present the same character, nor does it always run a regular course, observing definite periods of increase, acme, and decline. *Fourthly*, The type of the fever itself varies, being sometimes intermittent, sometimes continued, changing from the one to the other form, and being occasionally converted into other diseases. It may be questioned, however, whether many of these cases were not rather remittent fever, depending upon malarious influence, than typhus.

Typhus fever rarely terminates in health before the end of the second week; and, at times, it goes on much longer, sometimes for weeks. In one epidemic, the author met with a large number of cases which persisted for five or six weeks. The ancients were of opinion, that a turn or crisis of the disease, as of every form of continued fever, is occasioned by, or connected with, some discharge,—as diarrhœa, epistaxis, increase of urinary secretion or copious diaphoresis, which were consequently termed *critical*. The notion of critical discharges or efforts of nature is not now embraced by many, in the ancient acceptation at least. The ideas, indeed, that are attached to the expression, are sufficiently imprecise. Should diarrhœa supervene near the favourable termination of a protracted fever, it is looked upon

as critical; but if the same condition supervene in phthisis pulmonalis, and prove colliquative, we hear nothing of its being “*an effort of nature*,” or of its constituting a crisis. Yet, although we may discard the idea of critical efforts of nature, it cannot be doubted, that good occasionally results from spontaneous discharges; and that at other times, their supervention indicates a change in functions that had been long disordered, and a restoration to the healthy condition. Thus, diarrhœa or perspiration supervening on a fever of some duration, in which the organs of secretion have been deranged—as they always must be in fever—may indicate that the organs of secretion are assuming a new condition, and that the morbid association, previously existing, is beginning to disappear.

The ancients believed, that certain days were “*critical*,” or in other words, that a more favourable termination is more likely to take place in fever on some days than on others. Few modern practitioners, however, put any faith in the doctrine of critical days, and the author is satisfied, from his own observation, that it is entitled to little or no consideration. It is proper, however, to remark, that the results of an extended series of observations in the epidemic typhus at Edinburgh in 1819, by Dr. Welsh, are somewhat in favour of the views of our forefathers on this head. According to Hippocrates and Galen, the greatest number of fevers terminate favourably on the 7th day, and many on the 14th,—these two days being the most propitious. Next to these come, in order of efficacy, the 9th, 11th, 20th or 21st; 17th, 6th, 4th, 3d; 18th, 27th, and 28th. The sixth day was the tyrant, *τυραννος*, because the crises that happened then, were generally unfavourable. After this, the most unfavourable were the 8th, 10th, 12th, 16th, and 19th. The 13th was a sort of neutral day;—the crisis which happened on it, being neither favourable nor unfavourable. Days were also divided into *intercalary*, in which the crises occurred less frequently, and were less complete, than on the *critical* and *indicatory*; and into *vacant* and *non-decretory*, in which a crisis hardly ever occurred. According to this division, they were enumerated as follows:—*Critical days*, 7th, 14th, 20th, 27th, 34th, 40th, 60th, &c. *Indicatory days*, 4th, 11th, 17th, 24th, &c. *Intercalary days*, 3d, 5th, 6th, 9th, &c. *Non-decretory days*, 2d, 8th, 10th, 12th, 13th, &c. Fortunate crises were considered to be indicated by favourable signs appearing three days before.

It would be strange if all this apparent exactness were well founded. The following table exhibits the results obtained by Dr. Welsh; but, although it has been considered by Dr. Christison, to show, “that the ancient physicians were correct in admitting the doctrine of critical days,” it appears to exhibit so much irregularity in the matter, that nothing certain can be deduced from it; and the results of other observers would necessarily exhibit great discrepancy, inasmuch as but few would agree upon the precise day on which the disease exhibited “a decided tendency to terminate.” By comparing the critical days of the ancients, as given above, with those on which Dr. Welsh noted “a decided tendency to terminate,” it will be seen, that except in the case of one or two of them there was no striking coincidence.



The data on which the following table is founded—it is proper to observe—were drawn from three types of fever taken promiscuously, and at a time when synocha and synochus were very common.

Days.			Days.		
Critical.	Non-critical.	Cases.	Critical.	Non-critical.	Cases.
3	—	6	14	—	63
4	4	18			10
5	—	80		16	11
6	6	34	17	—	34
7	—	129		18	2
	8	26		19	4
9	—	80	20	—	0
	10	17		21	15
11	—	69			
	12	80		22	3
	13	15		23	0

The specification of the critical and non-critical days, it will be observed, differs materially from that of Hippocrates and Galen, and most of the ancients.

The researches of another observer, Dr. Davidson, are by no means in favour of this doctrine of days; but they show very strikingly, that there is a great tendency in the disease to run its course in from two to three weeks. Convalescence, in the following table, means the time when the patient was actually free from the febrile symptoms, namely, “when his pulse was natural, his tongue pretty clean, his sleep tolerably sound, and his appetite moderately good.”

*Table showing the day of the disease on which complete convalescence was established in 181 cases of eruptive typhus.*

MALES.		FEMALES.	
Day of disease.	No. of cases.	Day of disease.	No. of cases.
12th	1	13	2
13	4	14	7
14	2	15	11
15	9	16	3
16	9	17	9
17	9	18	10
18	6	19	6
19	7	20	10
20	3	21	3
21	10	22	5
22	8	23	2
23	2	24	3
24	6	25	1
25	2	27	4
26	4	28	1
27	4	29	3
28	1	30	2
29	3	32	1
	—	34	4
	90	36	1
		44	1
		54	2

— Total,  
91—181

Average convalescence in males, 19.7 days.  
 “ “ females, 21.3  
 “ in males and females, 20.5

**Causes.**—It has been an oft-agitated, and still unsettled, question, whether continued fever—and especially typhus—be communicable from one person to another. Whilst some are of opinion, that all the forms of primary continued fever are infectious, and probably in an equal degree, others believe, that typhus alone can be so conveyed, and that one of the distinctions between the typhoid and the typhous fevers of certain writers of the present day consists in the latter being communicable by infection, whilst the other is not; and, lastly, there are some, who stoutly maintain, that even the lowest forms of typhus, cannot be conveyed from one person to another. Dr. Christison affirms, that in the British Islands probably not above one physician in fifty entertains any doubt of the infectious nature or communicability of continued fever; and he adds, that, on the contrary, in France, and also in Germany, the opposite doctrine is at the present time prevalently adopted, though not by so preponderating a majority. We are informed, on the high authority of M. Chomel, that, in France, the majority of physicians are opposed to the doctrine of infection, and that not above one in two hundred considers, that the continued fever of that country is capable of being propagated in this manner. A considerable change, however, has occurred in the views of many of the French physicians on this point, as will be shown hereafter.

Under the head of the causes of yellow fever, the difficulty of deciding whether an endemico-epidemic fever be at the same time communicable,—or rather, whether the spread of the disease be owing to endemico-epidemic influences or to contagion,—is alluded to, and evidence is there afforded to show, that there is no sufficient reason for the belief that yellow fever is ordinarily a communicable disease. The evidence, however, which is wanting in that case, exists in that of the disease now under consideration.

The annals of this, as well as of other countries, record the existence of adynamic fevers, which could not easily have been propagated in special cases except by contagion; for example, the fevers to which judges, jurymen, and others in attendance on courts of law, have fallen victims, and which appear to have been conveyed by the prisoners from the jails. Many of these "*black assizes*," as they have been termed, have occurred in England;—the last in the year 1750, which was described by a distinguished physician of the time, Sir John Pringle. It is true, that the spread of the disease in court has been ascribed, in these cases, to impure air, brought by the prisoners from their dungeons; and if it be not admitted, that impurity of air can generate the disease, it is unquestionable, that its spread is favoured by this circumstance. Typhus is, indeed, essentially a disease of large cities, and of the most filthy and crowded portions of such cities. In London, in certain districts, in which the poorer classes are densely congregated in small ill-ventilated chambers, when typhus appears, it spreads with frightful rapidity, sparing neither the young nor the old, male nor female; and yet, at the same time, in the better ventilated dwellings of the higher classes, the disease may not exist; or, if it should, its propagation from one to another is scarcely

ever observed. Dr. Tweedie adds:—"The fact, that the effluvia or exhalations from the human body, not only in disease, but in a state of health, may, by concentration, become so virulent as to produce fever, should be strongly impressed not only on the minds of medical practitioners, but on all those who are more immediately interested in improving the condition of the poor. Sir John Pringle states, that he has observed the hospitals of an army, not only when crowded with sick, but at any time when the air is confined, and especially in hot weather, produce fever of a peculiar kind, which is often mortal; and he remarked, that the same thing arose in full and crowded barracks, and in transport ships, when filled beyond a due number, and detained long by contrary winds, or when the men had been long kept at sea under close hatches, in stormy weather. Similar illustrations are to be found in the writings of army and navy physicians. The late Mr. John Pearson, who took great interest in establishing and promoting the interests of the fever hospital, told me, that when he was surgeon of the Lock Hospital, he uniformly observed, when more than a certain number of patients were placed in any of the wards, fever became prevalent in the establishment; and that from repeated observation of this fact, he was induced to restrict the number of beds in each ward, and never afterwards witnessed the recurrence of fever in the house."

In cases of camp fever, according to Dr. Stokes, it has been repeatedly observed, that when the camp was broken up, and the sick separated into different parties, the fever totally disappeared, although they might be exposed to bad weather and the jolting of carriages.

Under the impression, that putrid emanations of any kind, received into the blood-vessels of a healthy individual, might induce adynamic symptoms,—*Typhohémie*, of Piorry,—experiments have been instituted by several distinguished pathologists. These experiments have shown, that all the phenomena of typhus can, in this way, be produced in the lower animals. Putrid substances have been injected into their veins, and applied to the surface of wounds, by MM. Gaspard and Magendie, and, in every case, the animals became ill, had languor, loss of appetite, thirst,—all the symptoms, indeed, of typhus, and, where they died, local lesions were found corresponding with those observed in the human subject in typhus. In these cases, it was observed, that the greater and the more concentrated the dose of the putrid poison, the greater was the resemblance of the consequent fever to typhus. In certain experiments, that were instituted by another pathologist, M. Gendrin, he ascertained, that healthy human blood occasions no injury when thrown into the veins of animals. He then injected the blood of persons labouring under various specific fevers, and found that fatal results ensued, and that similar consequences followed its application to the cellular tissue. An ounce of blood, drawn from a person labouring under putrid fever, was injected into the cellular membrane of the groin of a cat; copious vomiting, dyspnoea, with a small, frequent, irregular pulse, a dry brown tongue, great prostration, and slight convulsion followed, and death took place in seven hours. It would appear, consequently, that adynamic fever may be induced by the recep-

tion into the vessels of putrid matters, without there being a necessity for supposing, in all cases, the transmission of a contagious virus; but still, ample evidence exists, that the extension of typhus fever, when it prevails epidemically, is by communication from individual to individual.

It has been properly remarked by Dr. Roupell, that our chief reasoning must be founded on the facts, observed when persons in health approach those who are infected, or when disease appears in a healthy situation immediately upon the arrival of an infected person. During the prevalence of typhus, it has been found that they who have attended upon the sick—as the nurses and medical practitioners—have been great sufferers. This has been the fact in all well-observed epidemics. At St. Bartholomew's Hospital, in London, during one session, six pupils were attacked, and about as many during the one immediately preceding; and, amongst the nurses, infection was almost universal. The reply here—as in all similar cases—is, that these persons may have been in the very locality that gave rise to the disease; and, therefore, that the causes, being common, may have induced the affection in all. Numberless instances, however, it is affirmed by Dr. Roupell, presented themselves, in which the fever appeared indisputably to be conveyed by the sick. The London Fever Hospital affords signal evidence of the communicability of typhus. It is affirmed by Dr. Tweedie, that every physician, with one exception—the late Dr. Bateman—who has been connected with it, has been attacked with fever during his attendance, and that three out of eight physicians have died. “The resident medical officers, matrons, porters, laundresses, whose duty it is to wash the patients' clothes, are so invariably and frequently attacked with fever, that few women will undertake this loathsome and frequently disgusting duty. The present resident medical officer,” Dr. Tweedie says—“was attacked with fever, and it was necessary, in consequence, to appoint some one to perform his duties during his illness. The first person, who officiated for him, resided constantly in the house during the day, but took the precaution of sleeping at home. He was, of course, very much exposed in the wards, in the performance of his duties. These, however, were soon interrupted by an attack of fever, which confined him for a considerable time. The duties were then undertaken by a medical pupil, who had completed his education, and entered the hospital in the most robust health. He had been taught, and did implicitly believe in, the non-contagious nature of fever, and ridiculed the idea of any personal danger from residing in the hospital. He performed the duty of house-surgeon for ten days only, when symptoms of a severe fever appeared. Unwilling to believe that he had caught the disease, he ascribed his illness to the effects of common cold, till the febrile prostration, and severe determination to the head, obliged him to resign his duties. He was, within twenty-four hours, seized with most severe symptoms of cerebral fever, which required the abstraction of nearly one hundred ounces of blood before they were subdued. He passed through a most dangerous attack of fever, and remained in the hospital five weeks, before he could with safety be removed; though I

fear this almost fatal personal illustration has not convinced him of the contagious nature of fever."

To meet the argument, that the prevalence of the disease among the medical attendants and domestics of the London Fever Hospital is owing to its being surrounded by malaria, as has been advanced by some,—it may be remarked, that the Smallpox Hospital is situate within a few yards of it, and that if malaria were the cause, the medical officers and domestics of that hospital ought equally to suffer from fever; yet it would appear from the evidence of the physician to that institution, Dr. Geo. Gregory, that no case of genuine fever had occurred amongst them for the previous eight years.

Similar evidence of communication is afforded, at great length, by Dr. Watson; and ample opportunity has occurred for establishing it in our own hospitals during the prevalence of typhus. In an epidemic typhus, which prevailed at the Philadelphia Hospital, and which has been described by Dr. Gerhard, three of the principal nurses, and about a dozen assistant nurses, besides a number of patients ill with various diseases, were attacked with the fever. Only one nurse of a ward, in which many of the patients were collected, escaped; and several of his assistants and of the patients were taken ill. Two of the resident physicians, who were in attendance on the ward in which the patients were most numerous, were also seriously ill with the fever. On the other hand, no nurse from the part of the hospital, where there were but few or no typhous cases, suffered; and the number of patients, taken ill in the surgical or lunatic wards, was very small. The ship fever, which has been prevailing—and is still prevailing—in many parts of this country (Nov. 1847), has afforded similar examples of ready communicability; and many valuable medical officers have perished from their philanthropic zeal in ministering to the relief of the numerous subjects of typhus that have occurred in the United States, and more especially in Canada; many of them having received the disease unquestionably by communication with the emigrants who brought it to the shores of this continent.

It has been a common belief, that the dead body of a typhous subject is capable of communicating the disease; but careful observation would seem to show, that this must be a rare occurrence. In an epidemic considered to be undoubtedly contagious fever, at St. Bartholomew's Hospital in London, seventeen bodies of those who had died of the fever were submitted to dissection. On an average, eight pupils, according to Dr. Roupell, were engaged upon each. There were one hundred and thirty-six thus occupied. Six of the whole body of students were attacked with fever, but of these six, two only devoted their time to dissection; and these two had been moreover exposed to the infection of the living body in the wards of the hospital; the other four were in close and constant attendance on the patients, as they were acting at the period of their seizure as clinical clerks. Such also was the result of observations at the Philadelphia Hospital. Both Dr. Gerhard and Dr. Pennock, and several of the resident physicians, were engaged nearly every day during the most intense prevalence of the

disease in making long and laborious anatomical investigations, without suffering from the fever.

Granting, then, that typhus is communicable, it is clear, that the poison is not very virulent, and that if due attention be paid to cleanliness and ventilation, and to avoiding prolonged exposure in the immediate vicinity of the patient, it may be rendered almost harmless, except in the cases of unusually susceptible persons. It has been well ascertained, in many severe epidemics, that where fever has been communicated to an individual of the better classes of society, by attendance on the sick in hospitals or in the restricted—and too often filthy—habitations of the poor, it has been rarely propagated in his own family, to visitors or to any of his attendants. It is affirmed by Dr. Christison, that among numerous instances known to him of young practitioners and medical students, who have caught fever in the prosecution of their practical studies, not a single case has occurred, where the disease was communicated to their families at home, or in their lodging-houses; and the experience of Dr. Christison is confirmed by that of the author, who has had numerous opportunities for witnessing epidemic typhus in the hospitals of Edinburgh, and in both hospital and private practice in London. These facts are important both in the way of hygiene and therapeutics.

In the "*Local Reports on the sanitary condition of the labouring population of England, in consequence of an inquiry directed to be made by the poor law commissioners,*" presented to both houses of Parliament in July, 1842, great stress is laid by most of the medical reporters upon the influence of the effluvia from animal and vegetable remains in stagnant pools, &c., in the production of typhus; and one reporter states, that "in every case he could trace the origin of the disease to miasmata arising from stagnant pools of water containing vegetable matter in a state of decomposition, and situate in the immediate neighbourhood of the dwelling-houses of the deceased individuals." It may, admit, however, of great question, whether the typhus could be properly referred to such miasmata.

It has been before remarked, that if prolonged exposure be avoided, the disease is not readily taken. This is shown by the fact, that casual visitors, whether of the medical profession or not, rarely take it. It is affirmed, indeed, that the common interval, in the case of clinical clerks and nurses, between their taking charge of fever patients for the first time and the breaking out of the disease, is three or four weeks; whilst in the case of a second attack, the interval is about as many months. It would seem that a second attack of true infectious fever scarcely ever takes place, except under repeated and long-continued exposure. The idea of complete immunity, after one attack, is certainly not correct. Dr. Tweedie, physician to the London Fever Hospital, had the disease three times; and Dr. Christison, physician to the Royal Infirmary of Edinburgh, six times. It is not, however, liable to relapse,—using the term in the sense of "repetition of the same malady through which the subject of it has recently passed." Dr. Henderson, of Edinburgh, indeed affirms, that it never relapses. Out of 1600 or 2000 cases, he never

met with one instance; the only affections which might have been termed relapses being febrile attacks dependent upon some local inflammation occurring during convalescence. The experience of Dr. Perry, of Glasgow,—who believes contagious typhus to be an exanthematous disease, and to be subject to all the laws of the exanthemata,—is similar. He states, that of 1145 cases of typhus, treated by him in the Glasgow hospitals in 1831, 19 so-called relapses occurred; but they were all either cases of fever supervening on some local inflammatory affection, and caught in the hospital, or local affections occurring during convalescence from the fever; and he adds, “it is as absurd to talk of a relapse of typhus fever, as to talk of a relapse of small-pox or measles.” Dr. Alexander P. Stewart, also, affirms, that he has never, among thousands of cases, seen a single case of relapse in the proper sense of the term, after the symptoms had begun to decline. This circumstance was strongly discriminative between typhus and the continued fevers which prevailed in many parts of Scotland in 1843, the constant occurrence of one or more relapses being a distinguishing feature of the latter.

As to the period of incubation—if it may be so termed—or that which elapses between the impression made by the contagious matter on the system, and the appearance of the disease, we have the most discordant statements. Many cases are recorded by excellent observers of the disease having manifested itself immediately,—so instantaneously, indeed, as to excite doubts whether the exposure and the phenomena could be regarded in the light of cause and effect.

Age would appear to offer a predisposition. Very young children are rarely attacked. In the asylum for children attached to the Philadelphia Hospital, where there were above 200, on the occasion of the epidemic typhus, before referred to, none were taken ill. After the period of childhood, the age seemed to be nearly without influence. Such was not, however, the case in the epidemic typhus, which prevailed at Glasgow in 1836. According to the data obtained there by Dr. Cowan, it would seem, that if the chances of seizure between the ages of fifteen and twenty were 100; it would be, between twenty and thirty, in round numbers, 78; between thirty and forty, 49; between forty and fifty 29; between fifty and sixty, 15, and above sixty  $4\frac{1}{2}$ . The danger according to age varies in different epidemics, but as a general rule, it is less fatal under 15 or 20; and much more so after 40. The influence of sex has not been well determined; Drs. Cowan and Welsh make the danger to be twice as great in males,—in part owing, doubtless, to their intemperate habits.

Where typhus prevails in a community, it has been noticed, that they who have recently arrived, or have resided in the locality for a short time only, are most frequently attacked. According to Dr. Davidson, 568 cases of eruptive typhus were admitted into the Glasgow Fever Hospital from Nov. 1, 1838 to Nov. 1, 1839; of these, 176 were natives of Glasgow, and 392 were strangers: 206 of these strangers had resided in Glasgow only from one day to two years, and 186 from two to twenty years and upwards. The cases in strangers amounted to about 69 per cent. of the whole number; and those who

were affected within two years of their residence in Glasgow, were about 52 per cent. of the whole number of strangers. Whence Dr. Davidson infers,—that strangers are more liable to become affected with typhus than native residents. *Secondly.* That the majority of strangers are infected within a comparatively short period of their residence in Glasgow. *Thirdly.* That a minor proportion of the strangers, like the natives of Glasgow, may escape infection for many years, and yet be afterwards attacked. “Most of the strangers,” he adds, “come from country districts in which it may be fairly presumed, that typhus does not constantly exist, as it does in large towns: it is, therefore, probable that the majority of them are unprotected by any previous attack, for if typhus attack an individual many times during his life, why should the natives of a town containing 263,000 inhabitants, who are constantly within the sphere of contagion, bear so small a proportion to the strangers.”

**Pathological Characters.**—There are no morbid appearances, which invariably present themselves in fatal cases of typhus. Were we to judge from one epidemic, we might be disposed to infer, that the disease is characterized by a certain set of morbid results; but by taking a more general view, we are less disposed to adhere to this opinion, and are led to give them a wider range. It has been maintained, that in true contagious typhus there is no follicular enteritis, and such appears to have been the case in the epidemic which prevailed at Philadelphia in the spring and summer of 1836. In about fifty cases, there was only in one, and that was doubtful in its diagnosis, the slightest deviation from the natural appearance of the glands of Peyer. In all other cases, they were remarkably healthy, as well as the surrounding mucous membrane, which was much more free from vascular injection than it is in cases of various diseases not originally affecting the small intestine. The mesenteric glands were always of the normal size. The spleen was of the natural appearance in one-half the cases; in the other half it was softened, but not enlarged, and in one case of five or six, it was enlarged and softened. These were the appearances of one epidemic, but as the lesions in question must be regarded as secondary, they may vary according to the character of the prevailing disease. Thus, in contagious typhus, which prevailed at Glasgow, dothinenteria or enlargement of the mucous follicles of the small intestines, and enlargement and ulceration of the aggregated glands of the lower third of the ileum, occurred in combination, and were found by Dr. Perry in about one in six of those who died.

The pathological appearances will, of course, differ materially according to the character of the symptoms; but, as in other cases of fever, the most careful examination may elicit nothing that is primary. Numbers of cases of true typhus—contagious typhus—have been investigated in London, where no marked morbid alteration of structure was to be seen, further than signs of congestion in some internal organ—encephalon, or mucous membranes—or a slight serous effusion.

**Treatment.**—The management of typhus fever reposes on the same general principles as that of continued fever in general. When once



the disease has become established, it is difficult—if not impracticable—to cut it short by any agency. The efforts of the practitioner are, consequently, restricted to tempering the morbid actions, and especially to removing any hyperæmia that may supervene in the internal organs. Not many years ago, the cold affusion, as advised by Dr. Currie, was frequently employed with the view of cutting short this form of fever, and the author had opportunities for witnessing the plan in the wards of the Royal Infirmary of Edinburgh, at that time under the management of Dr. Home, the late excellent professor of *Materia Medica* in the University of Edinburgh. In none of these cases did the disease seem to be arrested; although it was said to have succeeded in others; but the violence of the symptoms was occasionally mitigated by it. The same may be said of the employment of general bloodletting and of emetics;—both frequently advised with the view of cutting short continued fever; the latter especially, owing to the powerful revulsion which they excite, being considered well adapted for breaking in upon the chain of morbid actions that constitute fever. In no case has the author observed this result; nor has he been satisfied, that the use of emetics has had much—if any—influence on the progress of the disease. When bloodletting is practised at all, it should be in the early period—at the very onset, if practicable; but in many epidemics it does not appear to be productive of advantage even then. These remarks, however, apply only to general bloodletting. Throughout the disease, should hyperæmia supervene in any internal organ, the application of cups or of leeches may be demanded; but not so much as depletory agents as revellents.

Refrigerant remedies are extremely valuable in typhus; and the best of these is sponging with tepid or cool water, which may be practised with advantage whenever the skin is steadily hot and dry. The effect it produces is in the highest degree salutary; the temperant agency exerted on the part with which the water is made to come in contact is speedily conveyed to every portion of the intermediate system of vessels; morbid heat is diminished, and even the encephalic symptoms have been moderated by it, especially when it was applied to the head.

The remarks that have been made in regard to the use of cathartics in other forms of continued fever, apply also to typhus. Although highly extolled in this, as well as numerous other diseases, their efficacy is more limited than has been conceived by many. Indiscriminate and repeated purging can scarcely fail to prove injurious in a disease of prostration—as typhus undoubtedly is in its lowest forms and last stages. Yet, although repeated purging may be objectionable, the occasional use of a gentle cathartic, and, in the latter stages of the disease, of daily enemata, is all important. Where the excrementitious matters are allowed to accumulate in the bowels, they are the source of much reflected irritation, which can only be removed by the remedies under consideration.

As in other forms of fever, the most uncertain of all our classes of therapeutical agents—diaphoretics—are constantly employed; but observant practitioners, who admit the existence of such a class, have

been compelled to express their doubts as to their efficacy. The grateful effervescing draught, the neutral mixture, and the solution of acetate of ammonia, were employed in the epidemic typhus of 1836; but the testimony adduced in their favour is feeble. "From the very nature of these remedies, says Dr. Gerhard, it is difficult to ascertain if they possess much power over the disease: speaking of our general impressions, we should state, that they diminished the intensity of the fever, and concurred with the sponging in reducing the temperature. From these probable advantages, added to their freedom from deleterious properties, we employed them in a large majority of our cases." The author's opinion of these agents has been already expressed: the two first are refrigerants, when administered at a proper temperature, and therefore diaphoretic; and, the last is gently excitant, and applicable, perhaps, in certain stages of the disease; but the main utility of them all is of a negative character. Something, it is conceived, must be administered; and they are as devoid of objection, as any agents that could be employed.

In many stages of the disease, revellents are productive of excellent effects. In the early period, cupping with the scarificator may be used when signs of hyperæmia occur; but, later on in the disease, when coma and injection of the eye supervene, dry cups to the nape of the neck or along the spine may be applied with marked advantage. Under similar circumstances, blisters are occasionally applied to the nape of the neck, but the inconveniences they induce are by no means counterbalanced, at all times, by their good effects. Sinapisms are not liable to the same objections, and they are obviously more appropriate when the patient is debilitated, with the skin cool, than under opposite circumstances. Stimulating liniments of various kinds,—for example, oil of turpentine, alone or associated with the decoction of cantharides, as in the *Linimentum Cantharidis*, of the Pharmacopœia of the United States, have been much prescribed by some, in the period of prostration, and after the fever has subsided; but their therapeutical agency is limited. In cases of great prostration, all these revellents have been used as excitants, and especially blisters. The practice is more followed in this country than in Europe. It consists in applying blisters to the arms and legs, when the powers of life have become so far reduced that excitants seem to be clearly indicated. It was affirmed, indeed, by Dr. Rush, that there is a period in fevers, a "blistering point," when these agents may be used with eminent advantage. If the excitement be above the point, blisters are improper; if below it, the contrary. The difficulty obviously must be great in fixing upon this point, if any such exist. Blisters are by no means advisable stimulants in fever. They excite great irritation, and the discharge induced by them cannot fail to augment debility. As revellents, however, they are often of great advantage. When, for example, the disordered actions, constituting fever, have gone on for weeks without the existence of any considerable local mischief, the revulsive irritation, induced by epispastics, becomes a centre of fluxion, as it were, so that the mischief is localized, and the morbid chain broken in upon. Accordingly, in this way blisters may

be used advantageously in many febrile complaints; but care must be taken, that the irritation, induced by them, is not too intense, so as to be reflected to every part of the system, and thus add to, rather than detract from, the disorder of functions. In like manner, the revellent action of mercury is beneficially exerted under the same morbid conditions and circumstances.

In the latter stages of the disease, tonics may be necessary; and, in many cases, their effect proves salutary, when the force and frequency of the pulse have yielded, and the febrile heat is greatly diminished. The different vegetable tonics have been given in such cases in infusion, with the best results: of these, the cold infusion of cinchona, acidulated or not, with sulphuric acid, is one of the best,<sup>a</sup> or the sulphate of quinia may be administered.<sup>b</sup>

<sup>a</sup> R.—Infus. cinch. fʒvss.  
Syrup. aurant. fʒiij.  
Acid. sulph. dil. gtt. xx.—M.  
Dose, a fourth part, every six hours.

<sup>b</sup> R.—Quiniæ sulph. gr. vj.—xii.  
Acid. sulph. dil. gtt. xx.  
Aquæ fʒivss.—M.  
Dose, one-third, three times a day.

The chlorate of potassa has been strongly recommended by Drs. Hunt and Copland in the adynamic forms of fever, and Dr. Watson is in the habit of directing a solution of it in water, in the proportion of a drachm to a pint as a drink. He states that under the use of a pint or a pint and a half of this solution daily he has noticed, in many instances, a speedy improvement of the tongue, which, from being furred, or brown or dry, became cleaner or moist; but it may admit of a question, whether the chlorate had any agency in the matter.

Sooner or later it becomes advisable, in many cases, to employ agents that are more excitant. It has been the custom, with many, in all periods of typhus, to administer alcoholic drinks, when the symptoms appear to indicate it; but the objection to them is, that, unless skilfully regulated, they are apt to excite too much; and if any circumstance should interfere with their regular employment, the resulting depression—which is in a ratio with the preceding excitation—is apt to be considerable. It is better, therefore, to give wine, the action of which is more permanent and moderate, and, therefore, more easily regulated. The quantity may vary according to the case. Four ounces in the twenty-four hours is as small a quantity as can well be commenced with; which may be increased, according to the judgment of the practitioner. It may be administered, mixed with an equal quantity of water, and sweetened, or in the form of whey, which is generally the most palatable form. The disease has a tendency to run a definite course. If, therefore—to use the language of Dr. Stokes—we can support the system until the “most malignant influence” of typhus has passed away, we may prolong existence until the natural and favourable termination of the disease arrives. “We do not allow our patients to die of exhaustion, and bearing in mind the depressing influence they struggle with, we give stimulants at the proper time, and with a bold hand. We give our patients an artificial life, until the period arrives when nature and health resume their sway.” It must be constantly borne in mind, however, that we can only act upon the excitability or the life already present in the system; and, by adminis-

tering our excitants too freely, we may exhaust it long before the period of propitious termination referred to by Dr. Stokes. When, under the use of wine, the febrile heat, and the frequency of the pulse augment, the tongue becomes dry or drier, the breathing more hurried, and the patient more and more restless, wine is improper, and the prognosis often unfavourable.

Dr. Stokes has endeavoured to deduce from the state of the heart an additional rule of guidance for the inexperienced in the exhibition of wine in typhus. Two opposite conditions of that organ may be observed in the disease: in the one, the impulse becomes extremely feeble or altogether wanting, whilst the sounds are greatly diminished in intensity; in the other, the impulse and sounds continue vigorous through the whole course of the disease. These opposite states are not necessarily revealed by the condition of the pulse or the warmth of the surface. We may observe a hot skin, whilst the action of the heart is almost imperceptible; and, on the other hand, a patient may be pulseless, cold and livid for days together, whilst the heart is acting with the greatest vigour. This condition of the heart has to be determined by auscultation over the infra-mammary and sternal regions,—the pulse being an uncertain guide. The physical signs, above mentioned, are considered by Dr. Stokes, to indicate a debilitated condition of the heart, which may even occur at an early period of the disease, and thus enable us to anticipate the symptoms of general debility; and he infers from his observations that their presence, in a case of maculated adynamic fever, may be considered as pointing out a softened state of the heart,—that this softening is one of the secondary local lesions of typhus; and, lastly,—and Dr. A. Hudson accords with him—that the diminution or cessation of impulse, the proportionate diminution of both sounds, or the preponderance of the second sound, are direct and nearly certain indications for the use of wine in fever. The common opinion is, that it should not be allowed, whilst the patient's eyes are red and suffused; but it has been properly remarked by Dr. Graves, that want of sleep may cause this; and being very common in fever, it cannot be brought forward as an argument against the use of the remedy. Neither—adds Dr. Graves—does a hot skin contra-indicate the use of wine, particularly when there is, at the same time, a tendency to coldness of the extremities.

The experiments of M. Chossat, which have been referred to in another work (*Human Physiology*, 6th edit. ii. 223, Philad. 1846), favouring the idea, that inanition may be the real cause of death in various exhausting diseases, it has been suggested, that alcoholic fluids, by readily passing by imbibition into the blood-vessels, may, in the advanced stages of fever, when death is impending, ward it off by the liberal supply of artificial heat, which alcohol—as an element of respiration, according to the view of Liebig—is capable of affording. Whether it act in this way or not, wine, properly administered, is capable of fulfilling well our views in the latter stages of typhus. The objection to the use of the more diffusible stimulants, as carbonate of ammonia, ether in its various forms of preparation, &c., is the same as that already made in regard to alcoholic drinks. They are not

sufficiently permanent in their action, and, consequently, their effects must be transient. Carbonate of ammonia is a favourite remedy with many practitioners, but it has never been eminently effective in the experience of the author.

Much difference of opinion has existed in regard to the employment of opium in typhus. It is certainly a valuable agent in many cases, and is rarely found to prove injurious, notwithstanding the cautions inculcated by many writers in regard to it, who appear to have been led rather by hypothetical considerations than by the results of experience. It has been laid down by Dr. Stokes—that there are three circumstances, that call for the employment of opium in fever: first, where there is persistent watchfulness; secondly, where an actual inflammatory condition of the brain existed, and has been subdued by proper antiphlogistic treatment, but delirium and other nervous symptoms still remain; and lastly, where an excited state of innervation of the brain exists without heat of scalp or remarkable throbbing of the arteries of the head. Dr. Stokes adds, that in all cases where the patient has been exposed to the depressing effects which high intellectual or moral excitement, or the abuse of spirituous liquors produces on the nervous system, there will be, during the course of fever, more or less disorder of the sensorium; and that, in such case, particularly if the delirium be independent of any affection of the blood-vessels, opium is the sheet-anchor,—beginning with a moderate dose, watching its effects, and repeating it in increased or diminished quantity according to circumstances. It may be administered in the form of Dover's powder, (gr. x.) or of the tinctura opii (gtt. xxxv. ;) or of the black drop, (gtt. xv. ;) or of the preparations of morphia. The sulphate, the acetate, or the muriate, (gr.  $\frac{1}{6}$ — $\frac{1}{4}$ .) may be given with this view. It has been affirmed by Dr. Gerhard to be obviously improper, where there is much dulness of intellect, attended with great suffusion of the eyes and countenance, yet, under these very circumstances, it is often given, and although without good effects in all cases,—for some are unfavourable, no matter what may be the course of treatment pursued,—it has not appeared to the author, either on pathological or therapeutical grounds, obviously improper.

Camphor has long been administered alone, or united with opium, partly under the idea, that it is possessed of narcotic properties, and partly as an excitant to obviate debility. It is not trusted to, at the present day, by many, yet some have confidence in its powers. It is unquestionably excitant, and the author has not been able to observe any other action from it. By this property, it is, at times, advantageous, where there is low muttering delirium, with tremors and sub-sultus tendinum, both when given by the mouth, (gr. v. every two hours,) and in enema.

R.—Camphor. ℞j.  
Mucilag. acaciæ f ʒj.  
Aq̄æ Oss.—M.

Dr. Davidson, who considers that wines, as they contain both stimulant and nutritive elements, are most to be relied on for supporting the strength, and that the pulse, along with the general symptoms of ex-

haustion, ought to be the guide for their exhibition, states, that ammonia, camphor, and quinia, are not to be depended upon in bad cases.

In protracted cases of spotted fever, in which there is general debility, with, or without evidences of encephalic hyperæmia,—subsultus, watchfulness, muttering, delirium ferox, or even convulsions,—Dr. Graves extols inordinately a combination of tartrate of antimony and potassa with opium, the discovery of the utility of which he claims to be “peculiarly his own.” The circumstances, under which the combination is applicable, are, according to him, exactly those which formerly would have been believed to demand the fresh application of leeches to the head, cold lotions and blisters.

R.—Antim. et Potass. Tartrat. gr. iv.  
Tinct. opii fʒj.  
Aq. camphor. fʒviiij.—M.  
Dose, fʒij. to fʒss. every two hours.

It appears to the author, that the intelligent proposer of this mixture places a degree of confidence in it, which can scarcely have been borne out by subsequent experience. Where, indeed, is there an example, in medical history, of any combination capable of effecting in any disease the amount of benefit, which Dr. Graves ascribes to this? “There is not,” he observes, “in the writing of any author on the subject the slightest trace of such a method of treatment to be found. As this method has manifestly saved many, many lives, under a combination of circumstances apparently hopeless, I cannot avoid congratulating myself upon being the first to propose a practice which has not only diminished the rate of our hospital mortality in a remarkable manner, but has been the means of saving many of my friends and pupils; for without its adoption, our class, at the Meath Hospital, would have been more than decimated, whereas at present we have to regret the loss of but one pupil.”

The diet throughout the disease must be regulated upon general principles. In the early period, it may be sufficient to allow barley water; and, subsequently, milk with the feculaceous aliments,—arrow-root, sago, or tapioca. Where more nourishment is demanded, beef tea may be allowed, but cannot be necessary until the active symptoms have passed away, and the condition has supervened which suggests the employment of wine, and of other tonics and excitants.

In the way of prophylaxis, the patient should, if possible, be placed where ventilation is practicable: and hence, when the disease prevails in the crowded and ill-ventilated habitations of the poorer classes in cities, it is important to send the sick to institutions that are adapted for the purpose, both with the view of preventing the spreading of the disease, and of affording the best prospects of cure.

When typhus fever appears epidemically, it is difficult to avoid its attack; yet much may be done by attention to cleanliness; to thorough ventilation, and to appropriate diet, which ought to be nutritious but not excitant. When free ventilation is attended to, it is not necessary that the family should be excluded from any communion with the sick; yet as the disease is contagious, such communion ought not to be more frequent or prolonged than is indispensable. The bed-clothes

should be often changed, and all unnecessary furniture, especially of woollen material, or of dark colour—for it has been found that the darker colours attract more odours, and, therefore, probably more miasms than the lighter—should be removed. Fumigations of chlorine, prepared by adding dilute sulphuric acid to chlorinated lime, may also be employed, partly with the view of acting chemically upon the exhalations, and partly because they suggest and require subsequent ventilation; and it has been properly remarked by Dr. Christison, that the personal attendants, in the case of the poorer classes, where space and ventilation can scarcely ever be attained, should be strictly limited to those required for the patient's wants. The necessary precautions will readily suggest themselves to the medical practitioner. Where there is a *foyer* of infection, it must be deprived of its malignity, as far as practicable, by appropriate ventilation and fumigation—bearing in mind, in all cases, that the latter without the former does but deteriorate the air of the sick chamber, and cannot fail, therefore, to prove injurious.

### 3. *Typhoid Fever.*

It was before observed, that the epithet *typhoid* has been applied to phenomena, characterized by prostration with more or less stupor, occurring in the course of any disease; and hence the terms *typhoid pneumonia*, *typhoid pleurisy*, &c. &c. Typhoid fever, at one period, meant a febrile condition of a continued character having similar symptoms; and even at the present day, the mass of the profession employ the terms with these very significations. Of late years, however, typhoid fever has been considered, by many pathologists, to comprise a certain set of phenomena differing from typhus, and from the condition that supervenes in long-protracted fevers, and to be identical with a very common febrile affection in France as well as in the British Islands, and not uncommon in this country.

This affection has already an extensive synonymy, although not many years have elapsed, since the views entertained in regard to it at the present day were first promulgated. It has received the names of *Typhoid affection*, *Dothinenteria*, *Dothinenteritis*, *Neodichliditis*, *Follicular enteritis*, *Gastro-enteritis with nervous affection of the brain*, *Follicular gastro-enteritis*, *Abdominal typhus*, *Typhus ganglionaris abdominalis*, *T. abdominalis*, *T. intestinalis*, *Febris intestinalis ulcerosa*, *F. nervosa gastrica*, *F. nervosa enterica*, *F. nervosa mesenterica*, *F. enterica*, *Enterotyphus*, *Enteritis folliculosa*, *Enteric fever*, *Entero-mesenteric fever*, &c. &c.; Fr. *Fièvre ou Maladie ou Affection typhoïde*, *Fièvre entéro-mésentérique*, *Exanthème intestinale*, *Entérite typhohémique*, *Typhohémie entérique*, *Entéro-mésentérite typhoïde*; Ger. *Sporadische Typhus*, *Nervöse Gastro-enteritis*, *Unterleibs-typhus*, *Abdominalganglientyphus*, *Bauchtyphus*, *Abdominal*, *Darm oder Ganglientyphus*, *Nervenfieber*, *Darmgeschwürtyphus*.

It is not more than thirty years since the anatomical characters of typhoid fever, in its restricted signification, were first announced. In the year 1812 was published the treatise on entero-mesenteric fever by MM. Petit and Serres; and the subsequent researches of MM.

Broussais, Bretonneau, Louis, Bouillaud, Chomel and others have demonstrated, that the disease has anatomical characters which are nearly constant, and functional lesions, which are almost always identical. The work of M. Louis on this affection is an imperishable monument of scrutinizing industry, and accurate discrimination worthy of all imitation.

It would appear, that typhoid fever or follicular enteritis is one of the most frequent and severe acute affections observed at Paris,—the various forms of common continued fever there being essential varieties of the same malady; and that it differs essentially from the typhus of England and of this country. It is, likewise, not uncommon in the United States, where it presents the same anatomical characters as in France. The “red tongue fever” of Kentucky, is said, by Dr. Bartlett, to be typhoid fever. The British practitioners generally do not admit this new division of typhoid fever or follicular enteritis, and typhus: most of them are disposed to regard the intestinal affection as an accidental complication occurring, not uncommonly, in ordinary typhus, and not characterizing a separate disease: nor do they agree with certain writers on this subject, that the follicular enteritis is non-contagious, whilst the typhus is readily communicable. The writers on follicular enteritis do not, indeed, agree amongst themselves on this matter. Whilst some, as MM. Bretonneau, Gendron and Putegnat, believe it to be contagious, and bring forward many facts in proof thereof; others assert, that they have no evidence whatever of its communicability in this manner. The physicians of Paris formerly accorded with great unanimity on this point; and one of the most distinguished of them, M. Andral, remarks, that if it be contagious at Tours, where it was observed by M. Bretonneau, it certainly is not so at Paris. In this country, the opinion of many observers accords with that of the physicians of the French metropolis. M. Louis, however,—with a degree of frankness that did him honour—believing that the contagious nature of typhoid fever was proved by facts, admitted it, some years ago, without hesitation. He now considers it to be demonstrated, that it may be communicated by contact with those labouring under the disease, by remaining near them, by means of the clothing they have used, and by contact with those that have attended upon them;—that its importation is often the origin of an epidemic, and that this latter is the effect and not the cause of the contagion; that the propagation of the disease depends upon the degree of intercourse maintained with the sick, and not upon the wretchedness or the unhealthiness of their habitations,—and that an isolated case may be the cause of its prevalence. On three different occasions, he had seen typhoid fever developed in his wards, in consequence of the admission of typhoid subjects amongst those who were suffering under other affections. M. Louis thus abandons one of the marks, that have been considered to be distinctive of typhoid fever, as contradistinguished from typhus; and his followers will of course adopt the example. The matter, however,—although, as Dr. Clymer has remarked, the evidence in favour of communicability is irresistible,—is still contested with much bitterness of feeling. It has been recently,



indeed, affirmed, that the whole subject of typhoid fever is one of the most irritating questions at the present day to the *Académie de Médecine* of Paris, and one on which the opinions of its members are most divided and contradictory. M. Bouillaud, at a recent meeting (1847), declared, that in twenty-five years, he had never seen a single case, in which contagion had been peremptorily demonstrated, and what he considered to prove the truth of his view was, that the pupils and physicians of the hospital did not take it,—a circumstance, which has been observed elsewhere. At the same meeting a communication from M. Ragaine, physician at Mortagne, on an epidemic fever, which prevailed there from September 1844 to the end of the summer of 1845, was reported upon by M. Gaultier de Claubry, in which M. Ragaine strenuously contends for its communicability, and states that whenever it made its appearance in any dwelling, it attacked in succession its inmates.

**Diagnosis.**—It is not necessary to repeat the ordinary symptoms, which indicate the existence of a febrile condition of the adynamic kind. It will be sufficient to point out the most important of the phenomena, which have been considered, in recent times, to form a part of, or to be connected with, the typhoid fever, in its recent acceptation.

The intestinal affection is generally well-marked from an early period. Diarrhœa is one of the most constant phenomena, and occurs amongst the first;—at times, commencing before the others; at others occurring simultaneously; and being generally—but not always—in a ratio with the extent of disease in the follicles of the intestines. The diarrhœa would seem to be dependent upon the lesion of the mucous membrane. M. Remak—it would appear—has minutely described the microscopic characters of the excrement in this disease: M. Schönlein had regarded the occurrence of crystals of ammoniaco-magnesian phosphate as diagnostic; but this has not been confirmed, and M. Remak failed to detect any fixed relations between their quantity and the stage of the disease.

Tympanitic distension or *meteorism* has, of late, been esteemed as of more importance than formerly, and as furnishing one of the distinctive marks of the disease. It certainly is found in a large proportion of cases. Of 197 cases, observed by Dr. E. Hale, of Boston, it was recognised, either in direct terms, or by necessary implication, in 130. In 24, there was nothing to show, whether it was present or absent; and in 43, it is expressly said to have been wanting. If all these, consequently, were really cases of typhoid fever, meteorism cannot be looked upon as a diagnostic symptom, since it was wanting in so many. At times, the meteorism occasions painful distension, the uneasiness being augmented by pressure; but at others, it is so slight as not to be distinctly recognised except by increased resonance on percussion. It is met with, more especially, towards the termination of the disease, when, as in other febrile affections, it is of unfavourable augury.

*Enlargement of the spleen*, perceptible during life, has been laid down as one of the pathognomonic signs. It may be felt below the

ribs, or by pressing the fingers under the cartilages during a full inspiration. In many cases, however, it cannot be perceived even where examination after death shows it to be much enlarged. The spleen was felt, by Dr. E. Hale, in 19 cases of 197 cases observed; was not felt in 21; and was not noted in the record of 157. The augmentation of the size of the spleen and its softening, which, according to M. Andral, certainly accompany every well-marked typhoid condition, he considers to be the effect of a diminution in the fibrinous matter of the blood;—the blood, from some cause unknown, being retained in the cells, and coagulating there imperfectly.

In the majority of cases, careful examination exhibits eruptions of the skin. Of these the most frequent are the *taches rouges*, red or rose spots. Of the 197 analyzed cases, before referred to, rose spots are recorded in 177; and it is affirmed, that in the remaining 20, sufficient attention does not appear to have been paid to render it by any means certain, that they did not exist. It is proper to remark, however, that M. Becquerel found them in only 23 of 47 cases. In the majority of cases, these *petechiæ*—as they are termed by Andral—appear from the 8th to the 15th day. They present themselves most frequently on the lower and middle portions of the chest, and upper part of the abdomen, are generally of a round shape, and although they do not seem to project above the surface of the skin, they can be detected by passing the finger over them. Their colour is generally rose; and the greater or less depth of colour has been regarded, by M. Andral, as indicating the greater or less severity of the affection. The number of the spots is likewise various. Sometimes not more than six or eight are perceptible; at others, the eruption is almost confluent. Their size, too, is equally various, but it rarely exceeds that of the head of a pin. The colour disappears when the spots are pressed upon by the finger, but returns immediately afterwards.

*Sudamina* have been mentioned as phenomena appertaining to the typhoid affection. These are small, colourless vesicles, generally occurring in great number, and found especially on the neck, the axillæ, and the groins. They are owing to the elevation of the epidermis by a small quantity of transparent serous fluid. According to some, they commonly appear from the 8th to the 12th day, but they are by no means constant, and, frequently, do not appear until the patient has become decidedly convalescent. Moreover, being of little importance in themselves, and giving rise to no sensation to attract attention, they are very apt to be overlooked. It is quite probable, however, that the sudamina have no particular connexion with the typhoid affection: they are intimately connected with the actual or antecedent existence of prolonged sweats, without distinction of diseases, and their existence may often be affirmed from the presence of prolonged sweating. It would appear farther, from observations in the wards by M. Bouillaud, that they are in a constant ratio with the sweats,—numerous when these have been copious, and rare under opposite circumstances; and that these relations are found to exist in the different regions of the

body—the sudamina being abundant in the parts where the sweat accumulates, and conversely.

From a comparison of typhoid fever with other diseases, with the view of determining whether the meteorism, enlargement of the spleen, rose spots, and sudamina, occurred equally in them, the following table was constructed by Dr. Hale.

	TYPHOID FEVER.		OTHER ACUTE DISEASES.	
	No. Cases.	Per. cent.	No. Cases.	Per cent.
Whole number, . . . . .	197		159	
Meteorism, . . . . .	130	66	9	6
Spleen felt, . . . . .	19	9	0	0
Rose spots, . . . . .	177	90	0	0
Sudamina, . . . . .	75	38	8	5

M. Andral enumerates the following as the principal circumstances that may lead to a certain diagnosis of this disease:—Youth, cephalalgia, diarrhœa, stupor, delirium, somnolency, petechiæ (rose spots), sudamina, epistaxis, intestinal hemorrhage, cough, tendency to the formation of sloughs or eschars, fuliginous character of the mouth, and meteorism. These he regards as characteristic symptoms.

The typhoid affection would appear to occur—as a general rule—but once in a lifetime. It has generally, too, been considered to be almost peculiar to middle-aged persons, and to be as rare in infancy as in old age; but this would not seem to be the fact. A recent writer, M. C. Taupin, has given a list of 121 cases, in young persons, with the ages at which they appeared.

Age.	No. of Cases.	Age.	No. of Cases.
2 . . . . .	1	9 . . . . .	10
3 . . . . .	3	10 . . . . .	5
4 . . . . .	7	11 . . . . .	10
5 . . . . .	3	12 . . . . .	13
6 . . . . .	9	13 . . . . .	10
7 . . . . .	10	14 . . . . .	29
8 . . . . .	5	15 . . . . .	6

The anatomical lesions that characterize the disease were found as constantly as in the adult.

It is rare to meet with the disease in persons above 55 years of age.

Dr. Samuel Jackson, formerly of Northumberland, now of Philadelphia, in enumerating the diagnostic differences between typhus and remittent fever, states, that negroes more certainly take the former, and generally have it more severely than the white inhabitants; but in the typhoid endemic of the winter of 1829, at the University of Virginia, not a single negro was affected with the disease.

In regard to the influence of season, M. Casper, of Berlin, has arrived at the following results: In nine years there died of this fever in that city, where it is very prevalent and fatal, on the average of each winter month, 27; of each spring month, 18; of each summer month, 23; and of each autumnal month, 41; whence he properly infers, that in Berlin typhoid fever is most prevalent and fatal in autumn, and least fatal in spring. On the closest analysis, he was unable to deduce any inference, which showed, that the rate of mortality from the disease was at all influenced by barometrical, thermometrical, or hygrome-

trical changes in the atmosphere, or that the deaths were more or less numerous under the prevalence of particular winds.

The examination of the blood drawn has not led to any decisive results. It was affirmed, indeed, by M. Bouillaud, that it does not resemble that of any other disease; but this is denied by M. Louis. It would seem, however, from the observations of MM. Andral and Gavarret, and M. Raciborski, that it is generally less coagulable than in other morbid conditions. The quantity of fibrin is certainly decreased. According to M. Simon, it exhibits the characters of hypinosis or diminution of the fibrinous element more distinctly than any other affection. In two analyses made by him, the ratio of fibrin was 2.525 and 2.010. In true typhoid fever, he says, it never rises perceptibly above the normal standard; often remaining at that, but still more frequently being below it. Should any inflammatory symptoms, however, supervene, the proportion of fibrin rises. When examined with the microscope, over and over again, by M. Donné, the corpuscles, in the most marked forms, did not exhibit any difference from those of healthy blood. The maxima, minima, and average results of 41 analyses by MM. Andral and Gavarret, were as follows:—

	Water.	Solid residue.	Fibrin.	Corpuscles.	Solid residue of Serum.
Maximum, . . . .	862.3	243.7	4.2	149.6	98.0
Minimum, . . . .	796.3	137.7	0.9	66.7	66.8
Average, . . . .	796.0	204.0	2.6	116.0	77.9
Healthy blood, . .	790.0	210.0	3.0	127.0	80.0

In regard to the varying character of the urine in this disease, very little light would appear to have been thrown by recent observers. Sometimes it is of a brown colour, acid, and of high specific gravity, like inflammatory urine; at others, it is clear, like the urine after copious drinking, whilst on other occasions it does not appear to differ from normal urine. As remarked by M. Simon, it is to be presumed, that these changes in the relative constitution of the urine correspond to certain reactions in the organism; but the connexion is not always very clear. It would seem, however, that in the first stage of the disease, a dark, denser, acid urine is often excreted, and that in proportion as the fever assumes a torpid character, and the vital powers become depressed, it becomes clearer, loses its acidity, becomes neutral, and in a very short time—often after from one to two hours—alkaline, containing carbonate of ammonia. Sometimes, a yellowish-brown, turbid, fetid, and alkaline urine is excreted. The amount of urea, according to M. Simon, never reaches the physiological mean, and is often far below it; the uric acid, on the other hand, is frequently increased. The salts, including the sulphates, are very much diminished, so that sometimes hardly a trace of them can be detected. Hence it would appear, that a decided decrease of the urea below the healthy average is a characteristic of the urine in typhus. Much interesting detail on this subject is contained in the *Animal Chemistry* of M. Simon.—Sydenham Soc. edit.—vol. ii. p. 242, Lond. 1846, or *Am. edit. Philad.* 1846.

The prognosis in typhoid fever should always be guarded. The danger is found to be greater among the old than the young. M.

Rostan has, however, remarked, that the robust are frequently cut off more rapidly by it than the weakly. MM. Chomel and Louis affirm, that they have seldom found cases terminate fatally, where the ages were between fifteen and seventeen. In the endemic-epidemic that occurred in the University of Virginia in 1829, all the cases, about thirty-five in number, occurred in those under twenty.

The prognosis is generally regarded to be more favourable amongst children. MM. Rilliet and Barthez, however, have recorded one hundred and eleven cases, of which twenty-nine terminated fatally. The disease would appear to be more fatal during the cold than the warm seasons. In the Massachusetts General Hospital, from 1822 to 1835, the ratio of deaths during the cold months, was 1 in 6.39; whilst in the warm months it was only 1 in 8.21. According to Dr. Gilman Kimball, cited by Dr. Bartlett in the second edition of his work on Fevers, there were received into the Lowell Hospital, during seven years, from May 1840 to May 1847, six hundred and forty-five patients with typhoid fever, of whom two hundred and seventy-six were admitted during the months of August, September, and October. The number of deaths was twenty-nine, being a mortality of only one in twenty-two and a quarter. The general treatment, he adds, was negative and expectant,—many of the patients taking nothing but gum Arabic, and drinks.

**Pathological Characters.**—Follicular enteritis, as the name imports, is seated in the follicles of the intestinal canal—commonly called the glands of Peyer and Brunner. In the stomach and duodenum, the latter are found in an isolated state; and at the termination of the jejunum and throughout the ileum, the former are seen agglomerated together to the number of thirty or forty, or more, and arranged in round or elliptical patches. They are met with, likewise, in the colon, associated two and two, and even in larger number. In their physiological state, the glands or follicles of Peyer are raised so little above the surface of the mucous lining of the intestine, and differ so little from it in appearance, that it requires care to distinguish them; but when diseased, as in typhoid fever, the patches become thickened, and their colour somewhat changed. This appearance differs according to the period of the disease at which it is observed. When examined at about a week from the commencement, they are, at times, of a dull white,—but at others, of a deep red colour: the hue, however, varies materially. Their size varies likewise, but they project to a greater or less extent from the mucous membrane, and have well-defined margins. The patches are generally of an elliptical shape, especially the largest, which have been observed two or three inches in their largest diameter. By the side of these, small tumours of the size of hempseed, and similar to pustules, are often seen, which are the glands of Brunner tumefied. The number of the patches varies; at times, there is but one; at others, twenty or more; and almost always many of the isolated follicles are affected. The eruption usually commences at the termination of the ileum and the ileo-cæcal valve, whence it proceeds upwards. Later on in the disease, ulcerations are perceptible in some of the patches. These are of different sizes, some-

times being very small; at others, occupying nearly the whole patch. These ulcers implicate the mucous coat, and may destroy the muscular coat. At times, they even perforate the peritoneal coat. Not unfrequently, Dr. Hale observed a large and deep ulcer, situate almost, or quite, in the ileo-cæcal valve, whilst some elevated patches, higher up the intestine, were free from ulceration. These ulcerations admit, unquestionably, of cicatrization. This has been witnessed frequently, and may occur with or without the formation of a new mucous membrane. The affection may also terminate in perforation of the intestines and in gangrene.

The period at which ulceration takes place, varies according to the character of the disease. In two cases, observed by Dr. Hale, ulcerations were found before the twentieth day; whilst in another, the disease had continued four months, and yet there were but eight ulcers, and no cicatrization.

Of forty-six cases, recorded by M. Louis, ten terminated fatally from the 8th to the 15th day; seven from the 16th to the 20th; twenty from the 20th to the 30th, and nine after the 30th day. The pharynx was the seat of the morbid change in eight cases; of ulceration, in six; of submucous purulent infiltration, or of false membrane deposited on its free surface, in two. In no instance were the follicles of the pharynx diseased in the manner of those of the intestine. The ulcerations were not found in any subject dying before the 15th day, and in one case only, which proved fatal, after the 30th. In seventy bodies of those who had died of other acute diseases, exclusive of variola, no single instance of pharyngeal ulceration occurred; hence, M. Louis regards the pharyngeal ulceration as entitled to the rank of a secondary lesion in typhoid fever. Similar ulcerations existed in the œsophagus in seven cases, and they were generally attended with some more or less marked lesion of the mucous membrane of the stomach, which in no instance led to perforation, and was observed only in subjects that died after the 16th day. No such ulceration was observed in those who died of other acute diseases, although extensive destruction of the mucous coat, with softening, and attenuation of the submucous tissue—a lesion that terminated in perforation of the œsophagus in two cases under the care of another observer, M. Barth—occurred in three instances. The appearances observed in the stomach were by no means distinctive.

The condition of the mesenteric glands—as might be presumed—is dependent upon that of the lining membrane of the intestines. These glands are the lymphatic ganglions to the intestines, and when any source of irritation exists in the latter, the ganglions become enlarged, like those of the groin and axilla, when adequate irritation exists in any part of the lower or upper extremity. The mesenteric glands, which correspond with the morbid follicles, may be simply enlarged, red and infiltrated, as in the earlier stages of the disease; or they may be softened and in a state of suppuration, in the latter stages. The spleen has generally been found in a morbid condition. Yet its lesions vary materially. At times, it is hypertrophied and softened; at others, small and denser than natural, and, at others again, it was

apparently healthy. The changes in the condition of the spleen occur at an early period, but they are not distinctive, and are met with in diseases of very different natures. The same may be said of the liver, which, in twenty-seven cases examined by Dr. Hale, appeared to be healthy in structure in fourteen; more or less soft or friable in ten; hard in one; congested in one; and in one the serous coat of the left lobe was highly inflamed, and covered with a coating of lymph. In an epidemic fever of this form, which prevailed at Nottingham, England, between July and December, 1846, the spleen was, in the majority of cases, unaffected; although in eighteen persons examined after death, the glands of Peyer were found enlarged in 17; and ulcerated in 13. The morbid appearances presented in the other organs of the body are by no means distinctive. The same softening of the heart as in typhus has been met with in this form of fever, and in both diseases, the feebleness of pulse has been ascribed to this condition. The lining membrane of the heart and arteries has been found redder than usual; and that of the veins thickened, injected, and ulcerated. These lesions have not been regarded as special to the disease under consideration. They have been found in other affections, and some of them have been esteemed, in the majority of cases, cadaveric. As in other fevers attended with much cerebral disturbance, the encephalon has been carefully examined, but without meeting with any appearances that could satisfactorily account for the phenomena; so that it has been laid down as a principle, that in this disease there is not a nervous symptom, which may not manifest itself without any appreciable alteration in the brain and its dependencies, and that when anatomical lesions of the nervous centres are met with, they are so slight and inconstant as not to permit any rational consequence to be deduced from them.

It would appear, therefore, that the morbid condition of the glands of Peyer and Brunner is the most constant lesion in follicular enteritis or typhoid fever, when the two terms are used synonymously; and that it is the pathological state which generally characterizes the malady. Hence, the different names that have been given to the disease, and the cause of its being considered an "intestinal exanthem" by some. Yet even by those—as MM. Bouillaud and Andral—who regard typhoid fever in this light, it is admitted that the morbid condition of the follicles may be absent, and that many cases have occurred where all the symptoms of typhoid fever existed; and yet, on dissection, there was neither the "*exanthème intestinal*," nor any lesion of the digestive tube, which could account for death. M. Andral, however, remarks, that the lesion of the follicles is met with in ninety-eight cases in the hundred; and some have affirmed, that it is found in all cases. It is proper to add, that disease of the glands of Peyer is observed on the dissection of persons who have died of phthisis, accompanied with diarrhœa. The intestinal follicles may also be morbidly developed in certain diseases—as scarlatina, and cholera morbus. In infants, according to MM. Rilliet and Barthez, ordinary inflammation of the patches of Peyer is often identical, except in intensity, with that of the typhoid affection. The appearance is the same; and if—

say they—there be a difference between the two diseases, it must be sought for elsewhere than in the lesion of the patches (*plaques*). They maintain, indeed, that there are many relations between typhoid fever and enteritis in the infant.

An interesting question arises—to which it is only necessary to make a brief allusion—as to the pathological importance of this lesion of the follicles? There certainly would not appear to be sufficient reason for the importance that has been assigned to it, by some, in the production of the phenomena of typhoid fever. It has been remarked, that all the symptoms may present themselves without the intestinal lesion; and that the latter may exist without the presence of the former. There would seem, consequently, to be impropriety in placing typhoid fever amongst the Diseases of the Digestive Tube, as has been done by MM. Andral, Piorry, and others; or to give it the name Enteric Fever. It is not probable, that these follicles can be so intimately associated in their morbid derangements with the great vital organs as to give occasion to the ataxic and adynamic form of fever, which has been ascribed to them. The affection of the follicles would appear to be a mere symptom, and to be produced by the same cause, that gives rise to the other symptoms of typhoid fever, but which cause—in the existing state of science—is inappreciable. The author is not, indeed, prepared to admit, from what he has himself seen, and from a careful examination of the testimony of others, that typhoid fever and typhus are proved to be separate and distinct diseases: both, he considers, are forms of adynamic fever, exhibiting different phenomena under different circumstances,—generally, in this country and in France, the abdominal lesion being present, whilst in England, it is as commonly absent; and a strong circumstance, in favour of this view, is the fact, that since attention has been more directed to the represented difference between the affections in Great Britain, it has been clearly shown that the intestinal follicles are not unfrequently diseased in the ordinary continued fever. “Since attention has been drawn to the subject,” says a recent intelligent writer, Dr. Watson, “the patches of glands, and the whole tract of mucous membrane, from the stomach to the rectum, have been diligently explored; and the result seems to be, that at certain times and places (in other words, in certain epidemics), the ulceration of the inner surface of the intestines is far less common than in others. It was comparatively rare in an epidemic of which I witnessed some part in Edinburgh. Then I came to London; and for several years I never saw a body opened after death by continued fever, without finding ulcers in the bowels. More recently, however, and especially during the present epidemic, (1838) I have looked for them carefully in many instances that have proved fatal in the Middlesex Hospital, and have discovered neither ulceration nor any other apparent change in the follicles of the intestines. Still, in my own experience, such ulcers have been vastly more often present than absent;”—and he adds—“We must conclude, upon the whole, that although an inflammatory state of the solitary and aggregate glands, which strew the surface of the mucous membrane of the alimentary canal is not the essence of fever, yet that it is a very frequent accompaniment of continued fever.”



Epidemic adynamic fever has been witnessed, too, in this country, in some cases of which the glands of Peyer were not diseased, whilst in others, they were. Of this an example occurred in a fever that prevailed amongst the theological students of Lane Seminary, Ohio, during the fall of 1842, and the ensuing winter; and which has been described by Dr. Thomas Carroll, of Cincinnati, in the *Western Journal of Medicine and Surgery*, for 1843. The singular forms of adynamic fever,—erysipelatous fever—which have recently prevailed in different parts of the Union, and are referred to elsewhere, also exhibit the wide difference of expression, which it may assume. It is admitted, too, that the typhoid affection cannot always be diagnosed by the best observers, and can only, in such cases, be established with certainty on dissection. The whole subject is in need of farther evidence; and whilst they, who recollect the enthusiasm—carried almost to intolerance—on the part of the zealous, but mistaken, promulgators of the views of Broussais in regard to the seat of all fevers a few years ago, may be disposed also to regard those recently advanced as visionary, and unworthy of their attention, it behooves them to recollect, that they have been brought forward by able and intelligent observers, and ought therefore to be subjected to a rigorous and unbiassed scrutiny.

Such were the views promulgated by the author in the second edition of this work (1844); and subsequent observation has more and more confirmed his conviction of their accuracy. The endemic fever, which prevailed in many parts of Scotland in 1843, shows how widely continued fever may differ under different circumstances,—the excellent descriptions of it by Drs. Cormack, Alison, Arrott, Henderson, Kilgour, Craigie, Mackenzie and others, exhibiting clearly, that the phenomena differed essentially from those that appertain to both typhus and typhoid fever. Dr. Arrott described the disease as it occurred in Dundee, where it was preceded by a gradual decline of the ordinary fever. Black vomiting, he states, was common, and the bile was generally found viscid and thick. The appearances after death corresponded remarkably with those observed by the French Commission in the yellow fever of Gibraltar in 1828, particularly as regarded the condition of the liver, which M. Louis considers to be the anatomical character of yellow fever. For a good summary of the phenomena presented by this singular variety of adynamic fever, the reader may consult with profit the work of Dr. Clymer on Fevers.

More recently, it would seem, the typhoid has been the prevailing form of fever both in Edinburgh and in Glasgow,—whilst for several years previously, no intestinal lesion had accompanied the continued fever of those places. It was first remarked by Dr. John Reid, when pathologist in the Edinburgh Royal Infirmary, that the few cases, which appeared there, always came from the country. Dr. Hughes Bennett—the present pathologist of the Infirmary—for more than three years has had occasion to confirm the truth of this observation; and has affirmed, that during that time only two cases had occurred in the Infirmary. During the winter of 1846-7 up to February 1847, the disease was very common; and he had examined upwards of twenty

cases in which the follicular lesion of the intestines was more or less marked.

The facts connected with the ship fever, which is adynamic fever, of the form of petechial typhus, equally show, that the intestinal lesion can by no means be considered discriminative. On the examination of those who have died of it, no such lesion has generally been discovered; and yet exceptional cases have presented themselves, and in persons, who, during life, exhibited the same general phenomena.

At a meeting of the New York Medical and Surgical Society in January 1847, Dr. Swett stated, that he had recently attended three cases of adynamic fever, which threw some light on the pathology of the disease, more especially as concerned the condition of the glands of Peyer. The patients arrived at New York in a vessel in which the disease had been very violent,—the captain and all the sailors having suffered from it. In the first patient, no alterations were discovered; but some patches of Peyer's glands, near the ileo-cæcal valve, were enlarged and discoloured, being of a reddish-brown hue. In the second, a girl 20 years of age, who had the ordinary symptoms, the glands of Peyer were very much inflamed and ulcerated. The third case was that of a boy, attacked within a week after landing, who had suffered much privation. At the time of his entrance into the hospital, he was exceedingly prostrated. Stimuli were given at once, and he improved greatly. He lived for a fortnight afterwards, and for the last week seemed dying. A day or two before his death, livid discolorations of a linear form appeared about the upper part of the abdomen, as if from the giving way of small veins. On examination after death, no disease of Peyer's glands was discovered, except that some of them were hypertrophied,—the result, it was presumed, of former disease. In the cæcum, there were about a dozen sloughing ulcers, irregular in shape, the largest of them about the size of a five-cent piece.

Dr. Clymer, one of the consulting physicians to the Philadelphia (Almshouse) Hospital, in reply to inquiries made of him by the author, states, in a letter dated October 23, 1847—"that, in the late febrile epidemic amongst the immigrants, nearly all the cases admitted into the hospital resembled, both in symptoms and post-mortem appearances, the maculated typhus fever which he had seen some years ago in Dublin and London, and in this city in 1836; and differed essentially, both in symptoms and lesions, from the ordinary continued, or typhoid fever of this latitude. But amongst these patients, there were *four*, who had been placed under precisely similar anterior conditions, but who exhibited the characteristic abdominal symptoms of typhoid fever—diarrhœa with pain and gurgling on pressure in the right iliac region. In three of these the eruption was decidedly maculated; in the fourth, it closely *approached* the rose lenticular papulæ. Of these four cases, one died, and an enlarged spleen, with elevation and ulceration of the agminate follicles of the lower third of the ileum were found on examination. In two other fatal cases, where diarrhœa, without the other abdominal symptoms, had existed, a slight elevation of the glands of Peyer was visible. In other instances where diarrhœa had been a prominent symptom, no such lesion was discovered."

These cases, along with those of the epidemic at Rheims in 1839-40, described by M. Landouzy, in which there was obviously a union of the ordinary phenomena of typhus with the intestinal lesion of typhoid fever, are certainly confirmative of the view, that apparently the same epidemic adynamic fever may, or may not, be attended with lesions of the glands of Peyer,—a view which has been embraced by many of the best pathologists. “There is no line of genuine distinction,” says Dr. Watson, “between continued fevers, that can be relied on. They run insensibly into each other, even the most dissimilar of them; and are traceable often to the same contagion.” “It is certain,” says Professor Alison, of Edinburgh, “that some cases resulting from the contagion of the usual spotted typhus, show all the symptoms and post-mortem appearances attributed to the typhoid fever; and therefore it seems most probable, that the differences observed are only varieties depending on constitution, and on the agency of other causes affecting the constitution, besides the exciting cause of the disease.” And in treating of the morbid appearances observed in continued fever in the glands of Peyer and Brunner, he says:—“Such unequivocal disease of the mucous membrane of the alimentary canal is found, either alone, or in combination with the other diseased appearances in a majority of the fatal cases of continued fever which occur in Paris, and in a large proportion of those that occur in London; but in a much smaller proportion of fatal cases in Scotland. They are decidedly more frequent, at least in this country, after the fevers of children and young persons than in advanced life, and in fevers that are fatal at an advanced period than those that are rapidly fatal.”

The whole question, in regard to the identity of typhoid and typhus fever, is in a singular state of transition with some of the best minds in France. In the year 1835, the *Académie Royale de Médecine* proposed for the subject of a prize essay, to be determined in 1837, “to point out the analogies and differences between typhus and typhoid fever in the present state of science?” For this prize, M. Gaultier de Claubry contended; and for his essay the first *prix d'encouragement* was decreed. It was printed entire in the *Memoirs of the Academy*; and forms the basis of a separate work “On the Identity of Typhus and Typhoid Fever,” published by M. De Claubry in 1844. In it the writer attempted to show, that the typhoid fever of M. Louis is the same as the typhus of armies, with which he, from his long military service, was familiar. MM. Chomel and Louis frankly admit, that he has established this;—the former adding, that the establishment of such identity settles the question affirmatively in regard to the communicable nature of typhoid fever; and the latter, in the second edition of his work on Typhoid Fever, acknowledging, that “the comparative study of the symptoms indicates the *identity* of the two diseases.” “*Typhus* and *typhoid fever*,” says M. De Claubry, “are one and the same disease, to which it will be well hereafter to give the name *typhode fever*, to avoid the expression *typhoid*, which indicates only an analogy of form, and the word *typhus*, which excites alarm. But since *typhode fever* is essentially contagious, the practical consequence ought to be, that physicians, the public, and the

government, should, in future, in sporadic, and especially in epidemic cases, adopt those hygienic and prophylactic measures that are generally indicated in contagious diseases."

More recently, we have M. Grisolle affirming, that the typhus or *Peste d'Europe*—the synonymes of which are—to use his own language—*Fièvre pestilentielle*, *Typhus contagieux*, *Fièvre de Hongrie*, *F. des hôpitaux*, *F. des camps*, *F. des prisons*, *F. pétéchiale lenticulaire*, &c., are one and the same disease—*typhoid fever*, whilst "the continued fever of England, or typhus fever," he thinks, is a distinct malady. It would appear, consequently, that many of the pathologists of France, who have occupied themselves so much with the diagnosis, &c., of typhoid fever, no longer believe it to be distinct from the typhus of France and of Europe. With them, all is typhoid,—typhus, distinct from typhoid, being confined, according to them, to Great Britain, and sometimes seen in this country. This view is not, however, embraced by all recent writers. In the article "Typhus" of the *Dictionnaire de Médecine*—M. Dalmas esteems typhoid and typhus to be "analogous;" but not identical.

It is proper to add, that in the second edition of his work on Fevers, recently published, (Nov. 1847) Dr. Bartlett has the following observation: "It is now five years since the publication of the first edition of my work on Fever. This question, of the true relationship between typhus and typhoid fever, still remains a matter of controversy. It has been extensively discussed, both in England and France, and the opinion of the profession is still divided. I have watched this discussion closely and dispassionately, and I have seen nothing to induce me in any degree to modify the judgment which I had formed and expressed; unless, indeed, it be in withdrawing altogether the slight doubt, or qualification with which it was accompanied. The more I have studied the subject, and the more I have reflected upon it, the more thoroughly have I been convinced, that the objections to the opposite doctrine are conclusive and insuperable, and I cannot doubt that such will be the final verdict of science in the issue before us." Dr. Bartlett accords with the opinion, that there is as much difference between typhus and typhoid fevers as there is between measles and scarlatina; and he adds, what must be regarded in the light of a preconceived hypothesis,—“it appears to me that we are better placed than either the French or the English to study this question without prejudice, and more likely to arrive at the truth”—a proposition which will, doubtless—and may well—be questioned, especially on the other side of the Atlantic!

The view maintained by Professor Rokitsansky, of Vienna, in regard to the nature of the typhoid affection or "typhus," as he designates it, is, that it is a true dyscrasy or cachexia, and that the pathological process is characterized, in an anatomical point of view, by the deposition of a peculiar morbid product, which forthwith undergoes a distinct series of peculiar changes. The seat of this process is various, and depends upon the specific relation of the general process to certain organs. The tissues most subject to this deposition are the mucous membranes, especially the space between the mucous and the

muscular coat, and the mesenteric glands; and in Austria, at least—where the observations were made—the mucous membrane of the ileum (*ileo-typhus*) is most frequently affected; but it occurs in the bronchia and lungs, and also, although very rarely, in the colon (*colotyphus*.) This typhus deposit, according to M. Vogel, usually appears as a more or less firm, lardaceous mass, of a yellowish or whitish colour, which is deposited in greater or less abundance amongst the normal tissues, gradually softens, and as the normal elements of the region become also involved in the process, forms ulcers, which either heal by cicatrization, or continue until the death of the patient. In many cases, however, death takes place before the commencement of softening. The typhous matter, under the microscope, appears to consist of three elements,—an amorphous, semitransparent stroma; very minute molecular granules, and larger corpuscles, which seem to be imperfect cells and cytoblasts. Histologically, it cannot be distinguished from the deposits that occur in serophulosis and tuberculosis.

M. Vogel properly opposes the view, that there exists in the blood a specific typhous matter, with the deposition of which, in certain parts of the body, the disease localizes itself, and terminates. “At the same time,” he remarks, “the local importance of this deposit cannot be questioned,—as a great number of cases of the disease proceed to a fatal termination from their effects,—ulceration, perforation of the intestine, &c.”

M. Rokitansky considers, that this disease is excluded by the various forms of puerperal fever. In 200 dissections of the latter affection, he did not find one complication of the typhous process. He considers, that this immunity is likewise given by the pregnant state, by childbed, and even, although in a less degree, by suckling. In a very large number of cases of typhoid affection, only three occurred in the puerperal state. M. Rokitansky farther infers, that typhus and dysentery have the power of mutual exclusion.

**Treatment.**—The management of typhoid fever reposes upon the same general principles as that of the other forms of fever already described, and especially of such as are complicated with inflammation of the lining membrane of the stomach and small intestines,—the bilious or gastric remittent, for example. It need scarcely be said, that where one of the most constant—indeed the most constant—of the pathological conditions is inflammation of the follicles of the intestines, or its results, with frequently more or less inflammation of the mucous membrane itself, violent remedies of the emetic or cathartic kind should be used with caution. It has been already observed, that these agents are of little or no value in cutting short continued fever, and if they do not arrest it, they are certainly well calculated to increase the intestinal affection. This—as has been seen—occurs early in the disease; and, therefore, if emetics and violent cathartics be admissible, it can only be at the very onset. Still, although violent cathartics may be improper, the bowels—as in every other form of fever—should be kept open daily, by the mildest cathartics, as by castor oil in small doses, or by unirritating enemata.

M. Bouillaud has recommended the plan of bleeding *coup-sur-coup*, which, according to his testimony, has proved very successful; but it

would seem, from the observations of M. Louis, that he selected for experiment the cases only that were brought under his notice at the commencement of the affection, and that several of them were by no means cases of typhoid fever. If allowance be made for these, it would appear, that the mortality in his wards was really greater than elsewhere, and that the average duration of the disease in those who recovered under his care was not less than that observed by other practitioners.

Antimonials—on the contra-stimulant plan—have been recommended, by Professor Jackson, of Boston; but they have not met with the same favour in the hands of others; and even when antimonials are administered in much smaller doses, as diaphoretics in fever,—they have been found to do harm, where any decided tendency to irritation of the bowels existed.

The indications to be fulfilled are precisely those that present themselves in the forms of fever already referred to; but even more caution perhaps is needed in the regulation of the diet both during the active period of the disease, and the long convalescence. When inflammation has attacked the follicles, it may be aggravated by errors of diet more than by any other circumstance; and if the inflammation have gone on to suppuration and ulceration, time is required for the recuperative efforts to be properly exerted, and, in the meanwhile, the blandest diet should be recommended. In such cases, many German practitioners have employed the nitrate of silver, and, they affirm, with much advantage; and Dr. Dickson states, that in similar conditions occurring in remittent fever, he has learned to confide much in the remedy; although he admits, that so far as he is yet able to pronounce, its exhibition is tentative,—or, in other words, he is not able to discriminate with clearness the particular instances to which it is specially adapted. Hence, he says, many have failed in their efforts with it, and “it has not with us the reputation it deserves.” He prefers to use it—as do M. Oesterlen and others—when tympanites or diarrhœa presents itself, and he has very frequently seen the most gratifying effects follow its administration. He prefers it in small doses—from the tenth to the sixth or fourth of a grain. The analogy—he thinks—“is obvious, and promising of its decided influence over the inflamed and ulcerated state of the mucous membrane of the mouth, fauces, pharynx and larynx:”—but the analogy appears to be forced. In affections of the supradiaphragmatic portion of the digestive tube, and even of the stomach, the nitrate may be brought into immediate contact with them; whilst in cases of ulceration of the patches of Peyer, it has to pass through the intestinal tract until it reaches them, and must be exposed in its course to the chlorohydric acid, chlorides and organic matters, which can scarcely fail to decompose it. The author’s friend and colleague, Professor J. K. Mitchell, informs him, however, that he has frequently prescribed it with evident benefit as regarded the abdominal lesion; and he thinks by its action on the gastric nerves it singularly controlled the nervous phenomena.

Alum has also been prescribed by several French and German practitioners with the view of acting on the intestinal lesion, and it need scarcely be said, that any of the astringents recommended for chronic diarrhœa and dysentery might be given with the same view.

The treatment of typhoid fever of children must repose on the same principles. It will require, however, even less activity. The researches—few in number, it is true,—of MM. Rilliet and Barthez, are rather favourable to the use of sulphate of quinia. Trials have likewise been made with the remedy, in the typhoid fever of adults by M. Blache at the Hôpital Cochin in Paris, the results of which were favourable. The cases, however, were not numerous, and in certain of them other remedies were prescribed, either before or in conjunction with the sulphate. Subsequently, some of the patients of M. Husson, in the same hospital, were subjected to the same mode of treatment. The dose of the medicine usually prescribed was three quarters of a grain every hour: at times, it was larger, and given less frequently; and in several instances, two drachms and more were given in the twenty-four hours for several days together. In thirteen cases, no other remedy was administered; but although the patients recovered, the results did not show any great superiority over other modes of management. In no instance were the phenomena arrested by the quinia. This report is not very favourable as to the beneficial effects of the sulphate in typhoid fever. It has been given by Dr. A. N. Bell, of Connecticut, in the same disease with the effect of reducing the frequency of the pulse, but without appearing to exert the slightest influence on the duration of the disease.

#### 4. *Plague.*

SYNON. *Pestis*, *P. orientalis*, *P. contagiosa*, *P. septica*, *P. glandu'osa*, *P. adeno-septica*, *P. seu Lues inguinalis*, *Pestilentia*, *P. orientalis*, *Lues*, *Febris seu Synochus pestilentialis*, *Læmos*, *Anthraxia pestis*, *Anthracotyphus*, *Typhus pestis*, *T. pestilentialis*, *T. gravissimus*, *T. anthracicus*, *T. bubonicus*, *Exanthema pestis*, *Oriental or Levantine Pest or Plague*, *Pest*, *Typhus of the East*, *Septic or glandular Pestilence*; *Fr.* *Peste*, *Typhus d'Orient*, *Fièvre du Levant*; *Ger.* *Pest*, *Pestkrankheit*, *Carbunkelpest*, *Bubonenpest*, *Orientalische Pest*.

The nomenclature of this disease—which belongs almost exclusively to Eastern climes—sufficiently exhibits the different views that have been entertained of its nature. By most writers, it is regarded as a fever of the typhous family; but some of the most recent, as Drs. Brown and Shapter, have defined it to be “an exanthematous disease, the eruption consisting of buboes, carbuncles, and pustules, white, livid or black, and generally attended with malignant and very fatal fever.” This definition does not remove it from the typhous family; for it has been shown already, that both typhus and typhoid fever have been esteemed, by some, exanthematous in their character.

**Diagnosis.**—It does not appear, that there are any very distinct prodromic symptoms. Usually, the attack is ushered in by a strong feeling of languor and lassitude, with uneasiness in the encephalon. The countenance indicates anxiety and heaviness. There is, indeed, a feeling of great anxiety about the præcordia; and extreme restlessness both from this cause and from pain, which is referred to the heart

itself. The gait becomes vacillating; and the debility rapidly increases, until the upright posture cannot be maintained. The stomach is often affected with nausea and vomiting; and the patient suffers from a feeling of faintness, but rarely faints in reality. The countenance becomes more and more haggard, and the fixed anxiety of expression is only interfered with by twitchings and convulsive movements of the features. The skin is commonly hot, dry, and harsh to the feel. The pain in the præcordial and cardiac region becomes more intense; and vomiting, usually of a bilious matter, takes place. The tongue is swollen, which is esteemed a very marked symptom of plague, and is covered with a white fur, glistening towards the centre, like mother-of-pearl: towards the tip and edges it is moist and clean. The pulse is accelerated, small, and contracted, beating from 115 to 130 in the minute; the respiration is laborious; the speech thick, indistinct and tremulous. The bowels are usually confined, and not readily acted on by medicine; and the urine is high-coloured, scanty, and sometimes wholly suppressed. Shooting pains are experienced in various parts of the body, especially in the axillæ and groins; and, on examining those parts, swellings are perceptible, which, if they be seated in the conglobate glands, constitute bubo; if in the surrounding tissues, carbuncle. These along with the other symptoms, are characteristic of the disease. In the more favourable cases, the swellings are of a bright red colour; in the more unfavourable, of a livid or purple hue.

In the older English writers, we read of *Plague tokens*, *Plague marks*, *Plague spots*, by which one, struck with the plague, was known; but it is not easy to determine what they were. Dr. Shapter has no hesitation—as far as general description goes—in saying that carbuncles were the true tokens. They are described as originating in little pyramidal protuberances, having the pestilential poison chiefly collected at their bases; and as being surrounded by a blue or blackish circle, or putting out blisters. At the same time, the chief test of the token is said to have been the absence of pain even when pierced with a needle, which—as Dr. Shapter remarks—is certainly not the case with the carbuncle; and he concludes, that the eruptions generally were viewed as the tokens of plague. The idea of Dr. Copland is, that they were small tubercles, somewhat resembling warts, callous, and more or less deficient in sensibility, varying in size from that of a millet seed to that of a bean: he thinks they were probably merely a modification of the early stage of carbuncles in the more unfavourable cases. Dr. Hodges, the historiographer of the great plague of London in 1665, vaguely describes them as follows: “The genuine pestilential Characters by the common people amongst us called *Tokens*, as the *Pledges* or *Forewarners* of *Death*, are nothing else than minute and distinct *Blasts*, which have their *Origin* from within, and rise up with a little pyramidal *Protuberance*, having the pestilential *Poison* chiefly collected at their *Bases*, and according to the accustomed *Dispersion* of such *Agents*, gradually tainting the neighbouring *Parts*, and reaching to the *Surface*, as the *Configuration* of *Vessels* and *Pores* are disposed to favour their *Spreading*.”

The first stage usually continues for about twelve hours, when it is



succeeded by the second, or that of reaction. The encephalic symptoms are now more marked; there is great restlessness, stupor, delirium, or coma; the tongue is tremulous; the countenance has a peculiarly confused expression; the muddy look of the eye, which existed during the first stage, continues, but it is strangely mingled with an unusual lustre, and the pupil is very much dilated. The pulse varies in its character, being, at times, hard and full; at others, feeble, fluttering and intermittent. The tongue is much swollen, dry, parched, and of a yellowish colour, with a red streak down the centre, and at its edges; sometimes it is brown, cleft, and like horn, but it never acquires the thickness and the black colour so often seen in other malignant fevers: the teeth, lips and lining membrane of the nose are coated, however, with a dark sordes, resembling soot, which, as they dry, fall off in the form of powder. Gastrodynia is present in a great degree, and it is aggravated by the occasional vomiting of a blackish-coloured fluid; and, at times, there is incessant nausea, which nothing seems calculated to relieve. At this period of the disease, a hemorrhagic tendency is often apparent; blood is exhaled from the different mucous surfaces; and petechiæ, vibices—*maculæ magnæ*—as they have been termed, are perceived. The uterus is said to be particularly excitable, so that menorrhagia often supervenes; and, in case of pregnancy, abortion is almost certain to occur.

The restoration of a free cutaneous transpiration is a very favourable occurrence, and, if followed by a remission of the symptoms, it almost always indicates, that a happy termination is about to take place. This usually occurs at an early period of the second stage, and is characterized by a general abatement of the excitement,—the pulse falling to about the natural standard, and being steady in its character; the expression of the countenance becoming more natural; the eye clearer; the conjunctiva losing its injected appearance; the pupils being no longer dilated; the buboes enlarging, becoming more active, and suppurating, or the carbuncles suddenly appearing with broad surfaces, sometimes to the extent of four or five inches. On the other hand, if the disease be about to terminate unfavourably, the general skin remains dry and harsh, whilst that of the face and hands is covered, perhaps, with a cold sweat; the pulse becomes small, fluttering, and almost imperceptible; there is constant low, muttering delirium; the breathing is hurried and laborious; the eye sunken so that the countenance has a ghastly expression, and the skin is covered with petechiæ and vibices, whilst the buboes and carbuncles are not fairly developed. The powers of life are now evidently giving way, and death may ensue without a struggle, although it is affirmed by Sir A. B. Faulkner, that death very rarely follows a gradual extinction of the powers of life, and that in the greater number of cases, it is ushered in unexpectedly by some violent delirious effort, or suddenly terminated by convulsions.

Different varieties of the disease have been made, according to the intensity of the symptoms, but they do not appear to be necessary, as the disease is in all cases the same. Dr. Shapter, upon similar principles, has established three divisions.—1. Simple or glandular plague 2. Eruptive plague, attended by a period of reaction; and 3, Malig

nant plague, in which the period of reaction is either entirely absent, or but very imperfectly developed.

M. Bulard is of opinion, that the lymphatic system is first disordered, and that inflammation, degeneration, and suppuration of the lymphatic ganglia and vessels follow. It is not until suppuration in these structures has fairly set in, that the venous system begins to suffer, and a change ensues in the composition of the blood. When the disease is fully established, it invariably exhibits the same properties. The arterial and venous blood have both the same dark colour. It generally appears in a peculiar state of solution, and oil drops are frequently seen on its surface. It often has a peculiar smell; but never a buffy coat. In three patients, aged 19, 23, and 27 years respectively, and in whom the blood was drawn between the third and fifth days, it was of a dark brown colour, and in the course of two hours a good clot was formed. This, however, is said to be frequently not the case, especially when the oily globules appear. The serum was reddish, and gave off a gas, which speedily browned sugar of lead test paper, and, therefore, contained sulphohydric acid. Lachèze, who observed the plague in Egypt, states that the blood never coagulates, that it is greasy, and of a black colour.

After death, the blood is found in the arteries in small quantities, and is as black as that of the veins, fluid, and seemingly decomposed. In the large venous canals there is often found floating in it the oily-looking substance, which is discharged with it during life.

The duration of the plague is commonly from two to eight days. Many cases, however, have occurred in which death has taken place in a few hours, as in other malignant fevers. In such case, death may occur before the appearance of buboes or carbuncles.

**Causes.**—The causes of the origin and spread of plague have furnished a wide field for discussion. The view of some is, that it originates in the Delta of the Nile, whence it migrates to commit its ravages along Syria, Asia Minor, and especially at Constantinople; but the evidences of this migration have been by some esteemed insufficient, and there is reason,—it has been thought,—to believe, that under endemico-epidemic influences, of whose nature we know no more than we do of those that give occasion to other forms of fever, it may be engendered *de novo* in these and other places. The whole subject of Plague, and Quarantine Regulations, has been closely investigated, of late, both in France and England. In the name of a committee of the *Académie Royale de Médecine*, M. Prus shows—by a quotation only recently discovered in the work of Rufus of Ephesus, who lived under Trajan—that the plague, as it is seen at present, unquestionably existed in Egypt at least two centuries before Christ. The committee maintain, however, that it may also arise, and has arisen, spontaneously, on the banks of the Danube, as well as on those of the Nile and Euphrates; and their general conclusion is, that it has been known to arise spontaneously, not only in Egypt, Syria, and Turkey, but in many other countries of Africa, Asia, and Europe. Others, however, believe that Egypt is its sole original seat; and a recent able anonymous writer adopts an opinion, which is plausible, but not the less ques-

tionable, that the emanations from the dead bodies buried in Lower Egypt are the real cause of the persistence of the disease there—"that the disease is sown and preserved by the mode of sepulture—that the living are poisoned by the emanations from the dead. A porous level soil, filled with dead bodies." (*British and Foreign Medical Review*, July, 1847, p. 248.)

Clot-Bey has given the following tabular view of the principal causes of insalubrity; which, at times singly, but more frequently combined wholly or partly, have been esteemed by the generality of writers, as essential conditions for the development of plague.

Local causes of insalubrity to which the development of plague has been attributed.	A. Decomposition of organic matters.—Sepultures.	{ Prosper Alpinus, Desgenettes, Larrey, Pugnet, Pariset, Lagasquic, and Guilhon.
	B. The Nile inundations: mud of the river; stagnation of the waters; humidity.	{ Savaresi, Sotira, Desgenettes and Larrey, Brayer, and many of the moderns.
	C. South winds.	{ Desgenettes, Larrey, Pugnet, Brayer,
	D. A crowded population ( <i>encombrement</i> ); misery; famine, want of cleanliness.	{ Verny, Souliers, Deidier, Cholet.

At one time its ravages were great. During the prevalence of the *Black Death*, as it was termed, of the fourteenth century, it is computed by M. Hecker, that Europe lost twenty-five millions of inhabitants. We have frightful accounts, also, of its ravages at Marseilles, Moscow, London, and other places, from which it is now wholly banished. The last and the great plague of London was in the year 1665. It was followed by the great fire in 1666; which probably had some agency in preventing the recurrence of the disease. Certain it is, that no visitation has taken place since; and it is more philosophical to suppose, that the result was owing to better ventilation, and to an improvement of the locality, by an appropriate system of draining and other medico-municipal regulations, than to the enforcement of any quarantine laws. As has been elsewhere remarked, these prevalent maladies require a union of terrestrial and atmospheric influences for their production—a combination, similar to that which prevails in certain complex locks, requiring that two of many numbers shall be brought together, in order that the lock may open, whilst in all other conjunctions it remains secure. In the case of the great fire of London we may presume, that the endemic influences were modified by the altered locality; and hence, although favourable atmospheric conditions may have since been present, as there was no concurrence, there was no endemico-epidemic disease.

It has been presumed by many, that it may be, and often is, generated by filth, but this admits of great question. At all events, other circumstances must be superadded. Cairo, and the cities of Syria,

Asia Minor and Turkey, are distinguished for their want of cleanliness—not only as regards the cities themselves, but the inhabitants; yet many of the Italian cities and villages are no less celebrated; and Lisbon has been immortalized for its noisome condition:—

“For hut and palace show like filthily,  
 The dingy denizens are rear'd in dirt;  
 Ne personage of high or mean degree  
 Doth care for cleanness of surtout or shirt;  
 Though shent with Egypt's plague, unkempt, unwash'd, unhurt.”

In none of these places is plague endemic-epidemic.

A writer on the plague of the year 1721, who signs himself “A Lover of Mankind,”—in consequence of the plague not having visited London since 1665, sufficiently shows, that the immunity could not be correctly ascribed to any effective quarantine; but by a kind of argument like that adduced to show that Tenterden Steeple was the cause of Goodwin Sands, he ascribes it to the introduction of tobacco. “It has been remarked,”—he says,—“that since the use of tobacco has been so universal in Great Britain, that all ranks of people either snuff, chew, or smoke, the plague has not paid us a visit half so often as formerly. For since that terrible one in the year 1665, our land, blessed be God, has been perfectly free from it, which is now fifty-four years complete; whereas in the century preceding that, our ancestors had the plague no less than five several times, which at a medium was once in twenty years. This is evident from the following scheme, showing that this fatal sickness was in England in the years 1563, 1594, 1602, and also in the years 1625, 1645, 1665. Now, to what other cause can we reasonably ascribe our escaping this calamity so much longer than we used to do? I fear it is not owing to our virtue, which seems by no means to be more conspicuous than that of our ancestors. Nor can it be fairly imputed to our prudence, because no nation, that is not Mahometan, can possibly be more careless. We suffer ships from Turkey, and from Alexandria in Egypt, where the plague is always, more or less, to land their goods and their men without the ceremony of riding quarantine. We hazard, by this indiscreet proceeding, the health of our people, for the benefit of the merchant, which is carrying our notions of trade a little too far. Neither has our cleanliness procur'd us this blessed security, for there never was so little care taken of our streets, our night carts, and common-shores as of late years. Nay, cleanliness is tax'd by the duty on soap, and filthiness seems established by a law. All these matters considered, I must own myself at a loss how to account for our having been so long free from infection, unless it be because a vastly greater quantity of tobacco has of late years been consum'd among us.”

As in other forms of malignant fever, the question has arisen here:—Whether the disease be communicable? To test this, persons have been inoculated; but the results have been contradictory, and the patients have been at the time in the very localities in which the disease prevailed: consequently, no positive deductions could be legitimately drawn. The recent French commission infer, that “it is not proved, that the plague can be transmitted by inoculation even under the in-

fluence of a pestilential constitution;" that "they know of no experiment made beyond an epidemic *foyer*;" and after a minute inquiry, whether the disease be transmissible by contact of the sick in places where it is epidemic, they experience difficulty in determining, whether in any given case it be owing to contact, or to the epidemic or endemic conditions in action; and they conclude, "that an attentive and rigid examination of recorded facts establishes, on the one hand, that the immediate contact of thousands of plague patients has proved without danger to those who have been exposed to it in the open air or in well-ventilated situations, and on the other hand, that no rigorous observation demonstrates the transmissibility of plague by sole contact with the sick."

The evidence in favour of the contagion of plague is certainly by no means overwhelming, and has, indeed, been esteemed imperfect and unsatisfactory. So many contradictory statements of *facts* have been brought forward, that it is difficult to form any exact opinion either as to its origin or mode of extension. It is certainly an endemic-epidemic, and this inference is confirmed by the influence of season, which, in plague countries, is a common topic of observation. We are told, indeed, that the decrease of plague in the East, towards the middle of June, is so remarkable, that at Cairo, St. John's day, which is the 24th of June, is ever understood amongst the superstitious inhabitants to put a period to the disease. The uniformity of its decrease, as the summer advances, is so marked, that persons, who have previously confined themselves, come forth invariably on that day, mix with other people, transact their ordinary affairs, and restrain themselves in no respect from any apprehension that they may take the disease. But although plague is evidently dependent upon locality and season, it has been supposed, that a principle may be given off from a plague patient which, if concentrated,—as in very malignant forms of the disease, and in pent-up situations, where proper ventilation is impracticable,—might cause it in a healthy individual. Such *may be* the case; but by many, who have had ample opportunities for observing the plague, it has been denied;—and the negative view is strengthened by facts communicated to the English Admiralty, by Sir William Burnett. In December, 1840, the Zebra was driven into Kaiffa, on the coast of Syria, and the crew, having landed, lived for some time in the town. Shortly after this, cases of plague occurred at Acre; in repairing the fortifications of which, some of the crew of the Zebra were employed. This detachment returned to the vessel on the 15th of February: on the 17th of the same month, the Castor arrived at Kaiffa, with orders to break up the Zebra, and embark her crew; and, on the 20th, fourteen men, belonging to the latter vessel, were sent on board the Castor, in exchange for a party of artificers. On the evening of this day, a seaman belonging to the Zebra, who had been employed in the boats at Acre, was attacked with fever; and between that day and the 25th, thirteen more cases were added. The men were constantly removed on board the Castor, and the disease now manifested the character of genuine plague. In order to prevent the diffusion of the disease, eleven men were selected to attend

wholly on the infected persons: not one of these was attacked with the disease, nor were any of the *Castor's* people, except an artificer, who had been landed and lived with the *Zebra's* men at *Kaiffa*; although there were at least twenty-four persons, including four medical officers, fully exposed to the contagion during its continuance on board the *Castor*.

It has been farther denied, that the disease can be conveyed from a patient, by one unaffected, to another; and although the quarantine system is founded on a belief, that the disease can be imported by persons and goods, it has not only been questioned, but unequivocally denied, that fomites, in themselves, have any power of transmitting the disease. Were the correctness of these views established, the restrictive regulations of a supposed sanitary kind, which have been esteemed so essential in preserving countries from plague, ought to be abandoned; and it has been already shown, that in the case of the yellow fever, they are vexatious and often inoperative. The fears of communities are, however, so much on the alert in regard to both these formidable diseases, that it is difficult to induce municipal authorities to submit to experiments, which could be attended with but little real danger, in order to have the question fairly settled; and whilst doubts exist, commerce must consent to be fettered. In a recent work, Dr. John Davy gives many examples to show, that taking it for granted that the disease is contagious, it is but very slightly so; and hence there is a necessity for a revision of the quarantine laws, "with a fair prospect," to use his own words, "of their being greatly mitigated, and at the same time rendered efficient, to the great comfort of the traveller, the incalculable advantage of commerce, and the universal benefit of mankind."

The recent investigations on both sides of the English channel have shed light on this contested subject. All the Egyptian physicians, of the most opposite opinions on the general question of contagion, would seem to agree, that the disease, in its sporadic form, is not communicable; and it is affirmed, that in cases said to be imported by vessels into Europe, these vessels have always departed from infected places whilst an epidemic was raging. If this were to be proved, the question of quarantine need only apply to the latter cases. If no epidemic existed at the port whence the vessel sailed, no restrictions need be placed upon her.

Admitting that the disease could be conveyed from Egypt, it became important to determine the period under which persons arriving from suspected places should be kept under observation, or how long the disease may be in a state of incubation. The anonymous writer, before alluded to, thinks there is every reason to believe, that the period never exceeds ten days,—the French Commission say eight; the few facts that might be regarded as exceptions to this rule, being susceptible—in their opinion—of another interpretation. They maintain the opinion, that a plague patient deposited in a European lazaretto becomes the cause that developes in others the affection under which he is suffering; and as to the danger of transmission beyond epidemic *foyers*, by effects and clothes of plague patients, they do not deny the danger,

but doubt; and think, that further researches are necessary in localities where it is certain the plague is not endemic. All would appear to agree, that the transmissibility of plague by merchandise in the countries where the disease is endemic or epidemic is not an established fact.

The result of all the recent medical inquiries has been, that the rigour of the quarantine regulations has been materially softened both in England and France. The Regulations of both governments are given in the article of the *British and Foreign Medical Review* already referred to.

**Pathological Characters.**—It has only been of late years, that extensive opportunities have existed for discovering the morbid appearances in cases of plague. As the disease generally occurs in Mahomedan countries, and as a strong objection exists in them to *post mortem* examinations, difficulties were thrown in the way of the pathologist; and, besides, the ideas in regard to the contagious nature of plague have prevented physicians from availing themselves as extensively as they might have done of the numerous cases that presented themselves to their notice. In recent periods, the abhorrence entertained for dissections has diminished; and the notions of the contagious nature of the disease have not been credited by several physicians; hence, necroscopic examinations have been by no means unfrequent, so that we have now numerous records of personal observation, not only by European physicians, but by a Mahomedan and native of Egypt, Clot Bey.

The remark, that the anatomical changes, found in plague subjects, are the same as in typhus, although it has been combated by M. Dubois d'Amiens, appears to be essentially correct. There are no lesions, which, in the existing state of our knowledge, can be considered characteristic of it. The corpses of such as have died of this disease have been described by many as equally hideous; but this has been denied by those who have had large opportunities for observation. The petechiæ are described as being found particularly on the neck, sides of the chest, and limbs: buboes are, of course, to be expected in the armpits, not often in the neck; and, in those who have had no buboes; all the lymphatic glands have been found enlarged. Clot Bey affirms, that the lymphatic glands are always engorged, sometimes to five or six times the natural size; softened, and of a colour like lees of wine, and sometimes black,—those of the groins and armpits forming, by their agglomeration, a homogeneous mass, almost always of a lees of wine colour, with effusion of black blood into the surrounding cellular tissue. On cutting into the enlarged lymphatic ganglions, the integument covering them has presented the appearance of being bruised; considerable effusion of blood has been found in their immediate neighbourhood; and, surrounding and connected with them, knotted masses of lymphatic tissue are seen, with portions of cellular membrane, the inflammation and enlargement of which form small tumours. The lymphatic system has, indeed, been esteemed, by M. Bulard, the primary seat of the disease,—all the other morbid actions being considered secondary. The pericardium was

found, by Baron Larrey, to contain a larger quantity of fluid than usual, and this of a bloody character. The heart itself is generally flabby and enlarged; in some cases, it has been even twice the natural size, and its fibre pale and softened. Both the right side of the heart and the pulmonary artery, and, indeed, the vena porta, and the whole of the venous system, are commonly distended with black blood. The liver and the spleen participate in the engorgement, and the latter viscus has been seen of double the usual size, and markedly softened. The kidneys are usually of increased size, and sometimes thrice as large as in health. Their substance is softer than natural, and tears with facility. It is described as of a deep violet hue, gorged with blood, which has transuded into the pelvis. In the alimentary canal, there is almost always general softening of the membranes, so that its parietes tear with the greatest ease. The stomach contains a blackish fluid, which has been subjected to analysis, but, as might be expected, without any important result. The lining membrane of the stomach has been commonly much injected, exhibiting red patches like petechiæ, which, sometimes, from their size, might be considered ecchymoses. The lining membrane of the small intestines was in a similar condition, but not to the like extent. The encephalon has not shown any marked pathological alteration. The sub-arachnoid veins and the sinuses have been engorged; but the substance of the brain itself, as well as of the cerebellum and spinal marrow, has been generally natural. In some cases, Clot Bey found it softened.

It would appear, from the above statement of the results of necroscopic examinations, that although we might presume that, in this terrific disease, serious organic mischief must exist, pathological anatomy has not taught us anything precise: it is probable, that the lesions which are really met with do not constitute the disease, but are secondary in their character, and the result—as has been remarked by M. Rostan—of miasmatic poison.

**Treatment.**—It is impossible to lay down any precise rules regarding the treatment of a disease where so much difference of sentiment has existed and still exists. We are safe, however, in stating, that the general principles; which guide us in the administration of remedies in typhus, are equally applicable here. (See TYPHUS.) It is to be deplored, that all remedial agencies are too often ineffectual, owing to the malignity of the disease; and, accordingly, we are not so much surprised at the information given by Dr. Shapter, that a recent observer, after five months' experimenting with all kinds of treatment, and all modifications of it, in about 1000 cases, arrived at the melancholy conclusion, that although the medicines produced their effect upon the organism, the malady neither ceased nor changed.

The local treatment is generally very simple, and consists in applying a warm emollient poultice to the buboes, and mild ointments to the carbuncles; and if there be deficient action, the ceratum resinæ or the unguentum creasoti. It was at one time proposed to extirpate the buboes either by cauterization or incision; but this strange remedy—as might have been expected—instead of relieving the patient, added



materially to his sufferings, and aggravated the symptoms of the disease.

It has been affirmed, that in the countries in which the plague prevails, the water-carriers and the oil-carriers are generally exempt from it; whence it has been inferred, that it might be serviceable to anoint the body with oil, and to use frequent ablutions and the bath. Frictions with warm oil were used for many years by the superintendent of the Pesthouse at Smyrna, M. Luigi, who states them to be more efficacious, both as preventives and as means of cure, than any other course; but subsequent experience has shown them to be not only inefficacious, but injurious, from the fatigue they occasion. But whatever may be the effect of inunction with oil as a preventive, there can be no doubt of the efficacy of the other hygienic means—ablution and bathing. Whether the disease be, or be not, contagious, it is all-important that a proper attention be paid to cleanliness and free ventilation; and these, along with sobriety, and regularity in all things, with a proper allowance of good and wholesome aliment, constitute the best prophylactics.

Experiments have been instituted with the view of determining whether the chlorinated preparations be good disinfectants in this disease, but they have been too few to settle the question. It has been affirmed, that exposure to a heat equal to that of boiling water will destroy all contagious miasmata; but the difficulty, in these cases, lies in determining, whether such miasmata really existed where they have been suspected to be present. Still, it is well to bear in mind these observations, and to adopt every precaution, where any doubt exists regarding so formidable a malady.

It has been an old observation, that persons, who have issues discharging freely, do not fall victims to plague, and it has been affirmed, on the authority of Baron Larrey, that the plague rarely attacked wounded men, whose wounds were in a state of plentiful suppuration, but that as soon as the wounds were skinned over, they were equally liable to the disease. Hence, it has been suggested, that issues might be used in the way of prophylaxis, and Dr. Shapter encourages the idea. On this point, as on the whole subject of plague, the author is unable to say anything from personal observation.

##### 5. *Yellow Fever.*

SYNON. *Febris flava*, *F. Americana*, *Morbus Siamensis*, *Typhus tropicus*, *Typhus icterodes Indiarum occidentalium*, *Ochropyra*, *Ochrotyphus*, *Pestis occidentalis seu intertropica*, *Loimocholosis*, *Vomitus niger*, *Epanetus malignus flavus*, *Remittens icterodes*, *Tritæophya Americana*, *Typhus of the West*, *Vomito negro*, *Vomito prieto*, *Bulam Fever*, *Barcelona Fever*, *Hæmagastic pestilence*; *Fr.* *Fièvre jaune*, *F. matelotte*, *F. de Siam*, *F. icterique maligne*, *Mal de Siam*, *Maladie de Siam*, *F. typhoïde d'Amérique*, *Typhus d'Amérique*; *Ger.* *Gelbe Fieber*, *Gelbtyphus*, *Westindische Pest*, *Gallenpest*.

The different views that have been entertained in regard to the nature of this common fever of certain climes are sufficiently indicated by the synonymes. The cause of this appears to be, that no form of fever is more variable in the violence and character of its symptoms. Where it prevails endemically, it is often termed the *strangers' fever*; and although of great danger to the new-comer—to those who are

acclimated it is not often more severe than the simple remittent fever of the country. By some, however, the *seasoning fever* of the West Indies is considered to be distinct from yellow fever, and to be easily distinguishable, particularly in the beginning. In the former, Dr. Stevens remarks; there is no premonitory stage or cold fit; no inflammation of the stomach or liver; the tongue is clean, and the pulse full and incompressible; yet, in those who have not been seasoned, and who are young and robust, it, at times, makes its attack with overwhelming force; often terminating fatally within forty-eight hours, and sometimes earlier. It has already been stated, that a yellow suffusion of the surface is frequently seen in severe remittents; and in India, an intense yellow hue of the skin is every year observed in fevers of considerable severity; yet, according to Mr. Twining, yellow fever is scarcely to be accounted an endemic of Bengal. Dr. Dickson, of Charleston, thinks the yellow hue differs obviously from the sallowness of protracted remittents, and of jaundice,—being darker and deeper, between an orange and a bronze colour.

Although to the resident of climates in which yellow fever prevails yearly as an endemic, the disease, in this form, is one of deep interest,—to the inhabitants of other countries, it has been of moment only as an epidemic, or rather endemic-epidemic. In certain of the towns of the United States, situate to the south, a *strangers' fever* is witnessed annually, sometimes with more malignity than at others: in other cities, as New York, Philadelphia, Baltimore, &c., yellow fever having occurred at long intervals,—and the same remark applies to certain ports of southern Europe,—the characters which it presents, and the mode of origin and management have given occasion to much comment and controversy. It is of the last, that we shall treat here;—being doubtful, from all that has been written on this matter, whether the endemic and epidemic forms be not essentially varieties of the same affection, and both bearing some analogy to the remittent fever already described. It was remarked in Charleston, in 1804, by Dr. Ramsay, that neglected intermittents frequently terminated in yellow fever; by Professor Rush, that during the yellow fever of Philadelphia, in 1802, intermittents, the mild remittent, the inflammatory, bilious, and the malignant yellow fever, in many instances, ran into each other; and by Professor Caldwell, that in the yellow fever of the same city, in 1803, as the fever receded from the low ground and malignant atmosphere, which favoured or gave origin to it, it became more and more mild and manageable, until its “*evanescent shades*” were in many instances much lighter than the common remittent of the country. In Baltimore, according to Professor Davidge, it was noticed, that the bilious or remitting fever prevailed in its ordinary form, and continued until it was gradually lost in the severer forms of yellow fever, as the season advanced. Dr. John Davy has expressed the opinion, that the remittent fever of the Ionian Islands appears to be of the same kind as the endemic remittent fever of the East and West Indies, of the tropics generally, and of the south of Europe, including the yellow fever of warm climates, which, according to him, seems to be merely a variety of it; but if we admit the disease to be malarious,—the ma-

laria that gives rise to yellow fever must differ essentially from that which induces remittent fever, inasmuch as the latter is seen in almost all climates, whilst yellow fever prevails in certain places only. The facts, referred to by these writers, are explained by Dr. Dickson by what he terms the actual intermingling of the types of fever in malarious climates, and their supervention on each other. In the summer of 1807, many northern and foreign sailors had been induced to go up the rivers as boatmen. Considerable numbers of them were taken to the Charleston hospitals with country fevers—both remittent and intermittent—which, as soon as yellow fever became prevalent, ran into that epidemic,—the fever becoming continued, and black vomit ensuing,—and such, he infers, was a very common fact in the earlier history of the yellow fever of Augusta, Georgia, in 1839. According to him, remittent fevers and yellow fever have prevailed together in Charleston, but twice in the last quarter of a century—in 1827 and 1835. In 1824, the yellow fever was a “terrible pestilence” in that city; but there were no bilious fevers, or at least far fewer than usual; and in 1837–38–39 and 40, they had yellow fever, but little or no bilious remittent. He considers yellow fever to be a distinct form of continued fever, consisting specifically of but one paroxysm, which may and does vary considerably in duration, but whether long or short is never repeated;—is always single; whilst Dr. McArthur and others affirm, that a remission is never observable during the whole course of the fever.

**Diagnosis.**—Epidemic yellow fever has been well studied as it presented itself in the yellow fever of Gibraltar, of 1828. A commission was appointed by the French government to investigate it. This commission consisted of MM. Gendrin, Trousseau and Louis; and they were aided, in part of their researches, by Mr. Fraser, surgeon of the civil hospital, and Messrs. Gilkrest and Smith, surgeons of the English forces. “In the midst of universal desolation,” says M. Louis, (American edition, by Dr. Shattuck, Jun., of Boston,) “our observations were taken with great care. We had time enough, and our professional brethren afforded us every facility for a thorough examination of the bodies, being themselves present at the autopsies; and we, that is, M. Trousseau and myself, were fully aware of the importance of a study of the pathology of the disease, even supposing the necessary information on the origin and mode of propagation of the epidemic to be obtained in the documents collected by the commission. We felt that, independently of the task which our government had imposed on us, we owed it to our profession to study the disease before us, and this, too, more carefully, if not more minutely, than we should have studied an ordinary malady.” The symptoms of the disease have, likewise, been observed by practitioners on this side of the Atlantic, and under opportunities, in certain of our cities, which—it is to be hoped—may never again present themselves.

The phenomena are described by M. Louis as they occurred in the fever of Gibraltar, *first*, in fatal cases; *secondly*, in severe cases that recovered; and, *thirdly*, in slight cases, which also recovered.

1. The *fatal cases* commenced with intense headache, accompanied

by chills, shivering, pains in the limbs; and, soon afterwards, pain in the back. Heat, not often intense, succeeded to the chills, and this was sometimes followed by perspiration. At the same time, the face became red and animated, and, in some cases, swollen. The eyes were red, glistening, suffused, and the patients often complained of a sensation of smarting in them. Thirst was intense, and loss of appetite complete. Pain at the epigastrium usually supervened in fifteen or twenty hours from the onset. It was generally inconsiderable, and very few complained of its being severe or acute. Along with the pain in the epigastrium, nausea and vomiting occurred,—at times induced by drinks or by cathartics, at others, occurring spontaneously. Where no cathartics had been administered, the evacuations were unfrequent. The abdomen was soft and not painful to the touch, except in the epigastric region. The sleep was inconsiderable. Some patients were restless; and, in others, there was a good deal of jactitation during the night. The smaller proportion experienced, as early as the third day, great anxiety, and could not remain in any one posture; and, in some cases, there was delirium; but this symptom did not usually come on till the last day of life, and, consequently, was considered rather to belong to the agony than to the disease. With few exceptions, there was neither prostration nor stupor. The pulse was moderately accelerated, regular, and commonly bearing relation to the degree of heat, which was generally slight. The skin of the chest was injected in some cases; but this redness, as well as that of the eyes, diminished towards the middle period of the disease, or a little later, and new symptoms appeared. To the injection of the integuments of the chest, there succeeded a slight yellow tint of the part, and the eyes were of the same colour. When this colour appeared thirty-six or forty-eight hours before death, it became rapidly brighter, so as to be of some intensity at the time of the fatal termination. In other cases, in which it came on only just before death, it was slight at the time of the examination of the body, and commonly limited to the trunk. About this period, or a little later, the matter vomited, from being of a yellow colour, became brown or black, and the alvine evacuations also were blackish or black. At this period, too, the uneasy feelings and the anxiety persisted for a longer or shorter time, and in different degrees; the strength diminished; the temperature of the body fell, so that the limbs were cold before the agony; and in certain cases, there was suppression of urine. Even in fatal cases, the disease has sometimes an appearance of mildness, which is deceptive. The fever, and the pains, wherever seated, are slight; there is no agitation or delirium, and not any great diminution of strength, so that neither the patient, his physician, nor his friends are alarmed. Under this form of disease, patients died at times without taking to their beds,—on foot, as was remarked by their friends. Nor did the severity of the symptoms always correspond with that of the lesions.

2. In *severe cases in patients who recovered*, the early symptoms differed only in degree from those of the fatal cases. In some patients, the stools became black, and in a few—and these mostly children—the brown or black vomit occurred. In a great many

cases, there was no yellowness, and in the majority of instances in which it was found, it came on from the fourth to the sixth day of the disease. The extreme restlessness, the jactitation, which took place in those who died, was not met with in any of these cases. Towards the fifth day, the symptoms became less severe; the skin cooler; the pulse calm; the pain at the epigastrium diminished or totally disappeared; the thirst was less; the appetite returned, and convalescence commenced.

3. The *mild cases* began with the usual symptoms very slight in degree. In the progress of the disease, the epigastric pains were rare, as well as the vomitings, which were scarcely ever spontaneous, and in no case of a brown colour. So slight was the diminution of strength, that the patients either did not keep their beds at all, or were there for a short time—say half a day only; thus, to use their own expression, going through the disease on foot. In several of these cases, the febrile symptoms were very slight, continuing only for 24 or 36 hours; yet these persons were exempt from any other disease in the course of the epidemic, although exposed to all the causes, which could have produced the yellow fever in them, and it was likewise remarked, that persons, who had been slightly affected in the epidemic of 1804, passed uninjured through the epidemics of 1818, 1824 and 1828. This mild form was principally observed in children.

In regard to the more immediate diagnosis of yellow fever, there can be no difficulty in the severe and fatal cases, especially should there be a manifest epidemic. The great irritability of the stomach, the black vomit, and the yellowness of the skin are pathognomonic. In mild cases, however, where there is no declared epidemic, difficulty may be experienced; and it has been already remarked, that during the existence of an unquestioned epidemic yellow fever in a given locality, the situations in proximity with it may exhibit merely an unusual prevalence of cases, that appear to be the ordinary remittent fever of the season. In the mild cases, that occurred in the epidemic of 1828 at Gibraltar, all the more or less characteristic symptoms were often wanting. Often there was no vomiting, and never black vomit, black evacuations, yellowness, or unwonted anxiety. The disease seemed to consist of slight febrile symptoms, to which were added more or less intense headache, pain in the limbs, back and loins, and commonly redness of the eyes; but the sense of debility was so slight, that many did not even keep their beds. These cases could not be regarded as yellow fever under ordinary circumstances; but if many similar cases were observed in a short space of time, in the months of August and September, and in the latitude in which yellow fever prevails; if the eyes were injected from the commencement; the countenance red, the headache intense, the epigastrium sensible to pressure, yellow fever might be strongly suspected, although the existence of an epidemic might not have been declared. It has been considered, that there could be no doubts as to this point, even if the symptoms existed in the slightest degree only, where the disease attacked all the members, or the greater part of the members

of one family in the midst of an epidemic, and in a short space of time; since, of diseases of this kind, there is no other than yellow fever, which would attack a great number of persons of the same family in so short a space of time. This last argument does not, however, strike us so forcibly as it does M. Louis, as it might apply to epidemic fever of every kind prevailing extensively. In fatal cases, should doubt exist as to the character of the disease, a microscopic examination may remove it. In the great majority of cases, a greater or less quantity of black matter will be found in the stomach and intestines; and in all cases, as will be stated hereafter, there will probably be more or less disease of the liver of a peculiar character.

In the first stage of the endemic yellow fever of the West Indies, the blood is said to be of a brighter red, to contain more salts, and to be hotter than in a state of health. As the disease proceeds, its characters become changed; and towards the termination it loses its saline and animal principles, and becomes black and thin, in which state sanguineous effusions occur from the different outlets and tissues.

The ordinary duration of yellow fever is from five to seven days. Should the patient pass the sixth day without the occurrence of black vomit, his chances of recovery will be much increased; but even after this he may be carried off under symptoms of typhus. Relapses are by no means uncommon. The mortality is always great. In the Gibraltar fever of 1828,—according to a calculation made by the commission from 600 cases, short histories of which had been taken,—the mortality was in the proportion of one to six and a half. It varied, however, according to age and sex. Of children attacked, a seventh part only died; of women, one in five and a half; and of men one in four and a half. In this country, however, children have seemed to suffer more largely. Dr. Rush mentions the great mortality amongst them in Philadelphia in 1793; and, to use the language of Dr. Dickson, the mothers of Charleston long remembered with tears the unhappy summer of 1817. According to the same authority, there died in Philadelphia, in 1821, eighty-three out of one hundred and twenty-five—about two in three. Considered extensively, he thinks the mortality in Charleston will not average more than one in five or six. M. Louis observes, that the same symptoms had not the same value in prognosis at all periods of life; for instance, the black vomit, which in adults was the most certain harbinger of death, took place in a great many children who recovered.

**Causes.**—These have been a fruitful topic of discussion; both as regards their nature, and the mode in which they occasion the dissemination of the disease. That it is an endemico-epidemic,—that is, induced by a union of local emanations with a favouring condition of the atmosphere,—is now scarcely doubted. Of the precise nature of these emanations we know nothing. Our ignorance is as complete as it is on the nature of the emanations that give rise to intermittents. That the malaria is always paludal, as was maintained by Dr. Bancroft, is disproved by the circumstance, that it prevails to a great extent where no marshes exist. Terrestrial emanations are probably requisite for its production, but that these are induced by animal or

vegetable putrefaction or dissolution is by no means proved. It is necessary, also, for the disengagement of these emanations, that there should be a certain elevation of temperature. As elucidative of the extent of our ignorance on this matter, the following remarks by the editor of the *New Orleans Medical Journal*, in regard to the deaths of that city in the summer and autumn of 1844, may be cited. "The health of New Orleans was, perhaps, never known to be better than from the beginning of this year up to the present time. No epidemic whatever has prevailed, and the most extensive practitioners of the place unite in the testimony, that they have never had less to do during the same period. The summer has been the hottest ever experienced, with frequent showers during July and August. Thus, it would appear, we have had a large share of *two* of what have generally been considered the most *essential agents* in the production of the remote cause of summer and autumnal diseases—i. e.—*heat* and *moisture*. As to the other ingredients, viz.—*dead vegetable* and *animal matter*—one would suppose there never was any deficiency about such a place as New Orleans. Well, we have here all the *hypothetical elements of hypothetical malaria*—but where are the much-dreaded consequences? We will go on with our statement of facts, and our readers may draw their own conclusions. The Mississippi, which runs along the border of our city for about three miles, has probably not been higher within *fifty years* past. Its waters being considerably above the level of the city were permitted, by means of culverts, to pass into the gutters, and thus to flow along the principal streets in continued streams to the swamp in the rear. These lively streams, to the width of at least a mile along the heart of the city, have continued to flow from May to about the 10th of September, when their source was cut off by the falling of the river. The descent from the river to the swamp is about 4 or 5 feet; lessening as you recede till the waters in the gutters at the back part of the city (a distance of a half to three quarters of a mile) are almost stagnant. The scavengers usually draw out the thick, muddy contents with hoes, and after drying it is carted off. The supply of fresh water this season must have had a salutary influence upon these *filthy sewers*. Since the decline of the river, an immense *batture* along the whole extent of the city has been exposed to the rays of an autumnal sun, but little mitigated by cloud or rain for four or five weeks past. The effluvia from this *batture* are quite offensive, both in the morning and evening. Such is the state of the case; and under such influences, New Orleans has been, and continues to be, one of the healthiest cities in the world."

It was affirmed by Sir Gilbert Blane, that yellow fever never occurs either in tropical or temperate latitudes, unless the temperature has been for some time steadily at or above 80°. This circumstance, indeed, with the difficulty of assigning any particular animal or vegetable origin to the disease, has induced some to consider that it may be engendered by solar heat alone; but the overwhelming objection to this view is, that there are numerous places, in which the summer and autumnal temperature is much higher than that stated above, where yellow fever is totally unknown. Dr. Shapter admits, that it is diffi-

cult to state decidedly what are the local causes which produce it; but that they are most probably atmospherical; and, he adds, "as the disease is found only to occur in or near the sea-shore; most probably a climate which is modified by the sea forms a necessary condition." This error had been stated and refuted years ago. "It is certainly," says Dr. George Gregory, "a singular circumstance in the history of the yellow fever, that it has never prevailed to any extent at a distance from the sea, nor, except in a few instances, but on the shores of the Atlantic ocean." The experience of the United States is altogether counter to this assertion. The disease has prevailed in as malignant a degree two thousand miles from the Atlantic, as in the West Indies or elsewhere. Its malignity has been fearful at Natchez, Gallipolis, and many other places, and a fever, unquestionably of this character, has prevailed within the last two years far in the interior of some of the Southern States.

One of the most satisfactory evidences of the local origin of our occasional vistant—epidemic yellow fever—is the fact, that it has prevailed in this city, (Philadelphia,) as elsewhere, in certain parts of the town only, to which it could be confined by appropriate barricades. These were on the wharves, and in the streets nearest the river; and, according to Dr. Dickson, it is universally admitted, that the disease may originate in Charleston. "The facts," he says, "which go to prove its local production as an endemic of our city, are too numerous and clear to admit of a reasonable doubt."

In severe visitations, it has been observed, that animals have suffered from the deteriorated condition of the atmosphere.

Yellow fever occasionally breaks out and spreads on shipboard in hot climates, and the cause of this has, likewise, been a fruitful source of discussion. Thus far, it is beyond our knowledge; but here, as in all cases, we must presume that there is also atmospheric vitiation, and that the ship itself may be regarded as an infected district.

The most important question, inasmuch as it strikes at the very root of the vexatious quarantine regulations, provided it be answered in the negative, is, whether yellow fever be capable of being communicated, or be generally communicated, by contagion. It appears strange, that any eminent individual could be found to maintain that it is contagious,—always contagious, that is,—after the ample evidence to the contrary, that has been furnished even in this city. Yet Dr. Copland, in an article, not characterized by unusual courtesy in regard to those who entertain different sentiments, or freedom from unilateral prepossessions, concludes, "that yellow fever is infectious in its nature amongst the predisposed, and more especially in a warm, humid, and close atmosphere." "No reasonable doubt," observes Dr. Geo. Gregory, "can surely be entertained by any candid, intelligent, unbiassed man, that this disease, being once received into a town, is contagious. The evidence in favour of this opinion is certainly as strong as for that of the contagion of typhus or of plague." Another writer, Dr. Stevens, who maintains, that the disease is at all times essentially and absolutely the result of contagion, that it differs entirely from endemic fever, never proceeds from, and never passes into it,—remarks, that in



the African typhus—as he terms yellow fever—we must either shut our eyes against the most positive evidence, or admit that contagion is its *sole* cause. The proofs, which he has witnessed, are, to his mind, quite as strong as those in favour of the contagious character of either small-pox, scarlatina, or any other disease acknowledged to be contagious. Others, again, have believed, that the same causes which produce endemic fever, may, by the superaddition of a contagious property generated in the subjects of the disease, give rise to another form propagated only by contagion.

The evidence against these views, afforded by the visitations of epidemic fever in the United States, is absolutely overwhelming. They have been well summed up by an intelligent investigator, M. Chervin. In the *first* place, although it has been the constant practice of the inhabitants of towns in the United States to fly to the country as soon as the disease appears, and for those who are attacked to be carried to the homes of their families, in no instance has the yellow fever been propagated out of the towns. *Secondly*. The city hospitals, that were established in the vicinity of Philadelphia and at New York, furnished a signal refutation of the supposed contagious nature of the disease; for, in no instance, was it communicated to those who were employed about the sick; and similar observations were made at the encampment near Baltimore, during the prevalence of yellow fever in that city in 1819. From these and other facts, Dr. Chervin concludes, that in hospitals devoted to yellow fever patients, the attendants of every class have been invariably exempt from the disease, when these establishments were situate beyond the source of the sickness, and the attendants did not expose themselves to it. *Thirdly*. That although, according to the hypothesis of contagion, it might be imagined, that persons, frequently approaching patients within the range of infection, are more liable to contract the disease, than those at a distance, and not communicating with them, yet this is not the case. *Fourthly*. That in fact the nearest communication with the bodies of the diseased, inoculating with the blood of persons so affected, drinking the black vomit, &c., has not propagated the disease. *Fifthly*. That the apparel, used by patients, has appeared to be equally inoffensive as their persons and corpses; and that separation and seclusion of the healthy from the sick, and the prohibition of all intercourse, direct or indirect, has entirely failed in preventing its occurrence. It has been correctly, indeed, remarked by Dr. Eberle, that if yellow fever did possess the power of generating its own virus, and of communicating itself by contagion, the fact must have been proved ten thousand times by the most irrefragable testimony; and yet there is, perhaps, no incontestable case on record where the disease was thus communicated. “No one,” says a recent writer—Dr. Nott—“in or out of the profession, in Mobile, believes in its transmissibility, and our town is peculiarly well situated for investigating this point.”

It cannot be doubted, that yellow fever may be introduced into a port in ships, which, under certain inappreciable circumstances—as before remarked—may generate a malaria, that, under favourable conditions may engender the disease; and that this malaria may even

be powerful enough to affect men who visit the vessel, or are on the wharves, within a certain distance. The disease will not, however, prevail out of the region of the vitiated atmosphere. It will be restricted to those who come within the malarious sphere, and will altogether disappear, when the ship and cargo are removed to a distance. The case, adduced by Professor Eberle, of the ship *Ten Brothers*, which arrived at Boston in 1819, affords an illustrative example, both of the production of malaria on board ship, and of its non-contagious nature. This vessel having arrived at Boston on the 1st of August, a number of persons went on board whilst she was discharging her cargo, and of these, twelve individuals, living in various parts of the city, were seized with malignant fever, nearly all of whom died. The disease was not, however, communicated to a single one of those who visited the sick.

A writer in the *Western Journal of Medicine and Surgery* for 1842, Dr. J. W. Monette, of Washington, Mississippi, in a series of papers, which are well worthy of perusal—whilst he is far from advocating “the absolute and unconditional contagion or infection of yellow fever, and that it has the property of communicating itself from one individual to another in a pure and free atmosphere,”—contends, that under certain circumstances, independently of all local accumulations of city filth, the local atmosphere becomes so contaminated by a healthy population, that it is peculiarly adapted for the dissemination of yellow fever, when a portion of infected air is introduced. At times—he considers—the introduction of a moderate quantity will be sufficient; at others, when the atmosphere is less prepared, a larger quantity is required; and hence he deems the quarantine regulations most important for the protection of the citizens of such towns as are liable to the visitations of this malignant disease. The strongest case on record, perhaps, in favour of the view embraced by Dr. Monette, is that of the fever, introduced apparently into *Boâ Vista* by the British national steamer *Eclair*, and on which Dr. McWilliam has recently reported to the House of Commons (1847), testifying most strongly in favour of its communicability. “That an infectious fever,” says Dr. Copland, who—it has been seen—is eminently a contagionist in regard to yellow fever in general, “had been introduced into this vessel, and that it spread by infection to all who were attacked, are proved by the history of its progress; by the extension of it to all but one of the medical officers who attended the sick, and the death of most of them; by the introduction and spread of the pestilence to the inhabitants of *Bona Vista*; by the infection of five of the *Kroomen*, or native Africans, who are exempt from remittent fever, but not from this pestilence, although they are little subject to it; and of the persons who went on board the vessel after her arrival in England; and by the ‘fact of the sick attendants from the *Worcester*’ getting fever after returning to the *Eclair*.” In further proof of the above it may be added, that of four officers of the “*Growler*” steamer, sent to survey the purser’s stores on board the “*Eclair*,” three of them—the lieutenant, purser, and clerk—were attacked in consequence, and several of the crew; in all nineteen cases; and two of the three last cases died at *Woolwich*

with all the symptoms of the disease." Of this anomalous and fatal and—we think—communicable malady, a good notice is given by Dr. Condie in the American Journal of the Medical Sciences for Oct. 1847.

The observation of almost all has seemed to show, that the immunity from second attacks of yellow fever is nearly complete, and that this forms one of the most striking characteristics of this remarkable disease. Such would appear, in the main, to be the opinion of practitioners on this side the Atlantic, notwithstanding the affirmation by Professor Potter, "that in countries uniformly hot, the disease is seldom observed to occur more than once in the same subject; but in all countries where the winters are cold, we find very little difference in the susceptibility to the cause." Dr. Potter adds—"The emigrants from St. Domingo were exempt from the yellow fever of 1797 and 1810 in this city (Baltimore); but in 1819, 1821, they suffered as much, *ceteris paribus*, as any other variety of the human species. I have remarked in my notes of 1821, that since 1793, I have attended more than a *hundred* persons in a second attack, *twenty-one* in a third, *seven* in a fourth, *three* in a fifth, and *one* in the eighth attack of yellow fever." To have met with so many cases of the recurrence of a disease, which is usually considered—here, as elsewhere—to render the individual in a great degree unsusceptible of another attack, Dr. Potter's opportunities for observation must have been unusually numerous. The results, too, differ, not only from those obtained by many of his own countrymen, but by the commission of thirteen medical gentlemen, British, French, and Spanish, who at Gibraltar, in 1828, were appointed to examine the important question—"Does a first attack of yellow fever preserve from a second?" Of this commission, M. Louis was appointed president; M. Trousseau, secretary; and Dr. Barry vice-president.

The question was examined by them in a twofold point of view. *First*, Whether an individual, who has had the yellow fever in Europe, be susceptible of a second attack of the same disease in Europe. And *secondly*, Whether one, who has had the disease in Europe, can have it a second time in America, and conversely? Every precaution was taken by the commission to avoid all supposable sources of error; and the conclusions, deduced from an accurate detail of circumstances and calculations, were,—that second attacks are more rare in the case of yellow fever than of smallpox itself;—that an individual once attacked, even in the slightest degree, is, with very rare exceptions, for ever exempt from future attacks; and that this is true, not only where the first attack and second exposure have taken place in Europe, but where the attack and exposure have been in different continents. Hence, the important corollaries;—that persons, who have already had yellow fever, may remain without risk in a town where it is prevailing epidemically, as did the inhabitants of Gibraltar; and that the care of the sick should be, as much as possible, entrusted to those who have already experienced an attack; and the commission remark, that the same fact ought to have a great influence in the selection of troops for colonies where yellow fever prevails habitually. It was re-

marked, likewise, that the preservative influence of a first attack of yellow fever is not destroyed after a considerable lapse of time—twenty-four years for example; since the inhabitants of Gibraltar, who had passed through the yellow fever in 1804, were preserved from it in 1828, as effectually as those who had been attacked by it in 1815. The results of these observations had probably escaped the notice of Dr. Dickson, of Charleston, when he affirmed, that the privilege or protection, belonging to the inhabitants of the endemic localities of yellow fever, does not exist in the places which it visits occasionally and at different intervals. “The population of New York, Philadelphia, or Boston, of Cadiz, Gibraltar, or Seville, are all equally liable to its attack when once it appears in the midst of them.” “These are remarkable facts,”—he adds,—“hitherto very imperfectly and unsatisfactorily accounted for.”

It has been an idea, that negroes are less liable to yellow fever than the whites: and Dr. Rob. Jackson and Dr. Dickson state, that they have never known an African born negro attacked with it. In some epidemics, however, the countryborn blacks appeared to have suffered equally with the white variety; but Dr. Rush thought the disease was lighter, and such is the opinion of Dr. Dickson. The latter observer remarks that “the predisposition to it of the various tribes and races of white men differs relatively to their national and individual temperament. The Englishman, Irishman, Scotchman, German, New Englander, and Western man stand in the order of liability as I have arranged them. Far beneath them are the Frenchman and the Spaniard. In proportional mortality they may be differently ranked: the Irishman and the German are far above the rest; the Frenchman and Spaniard again stand lowest on the catalogue.” To establish these points, however, numerous statistical inquiries would be necessary; which, at present, we have not.

Amongst the predisponent causes of the disease, where it is endemic, must be reckoned—a removal from a healthy situation to the locality where the disease prevails:—hence, it attacks especially the unacclimated. A similar result occurs when the disease prevails epidemically. Attacks are, likewise, favoured by intemperance, by excessive exposure to solar heat, to the damp and cool air of night, and by whatever is calculated either to reduce the tone of the general system or to cause irregularity of action in any important organ.

Dr. Mackintosh affirms, that many cases have come under his observation, in which fatal attacks of fever appeared to have been produced by inattention to the bowels; and he expresses his conviction, that it is a matter of the first importance to every one going to a warm climate, to keep his bowels open by gentle medicine. Repeated observation—he says—has induced him to believe, that a person may very often be exposed to any or all the causes of fever, even in the most unhealthy situations, without being affected, provided his bowels be in a proper state, his mind free from apprehension, and his habits good.

**Pathological Characters.**—Numerous opportunities have presented themselves for necroscopic examination in yellow fever. The ap-

pearances of course vary, as in other febrile affections, but still some are met with, that appear to be characteristic of certain epidemics, if not of all. Of these, the most striking would appear to be the morbid alterations of the liver, which has been found pulpy, soft, very yellow, and easily broken down; its structure, at times, completely destroyed; and, by some, it has been described as resembling rotten cork. The spleen, too, has been found altered in a similar manner. The stomach and bowels usually contain more or less of the dark-coloured matter that was vomited during life; and the mucous membrane has been vascular, and of a deep red colour, not in depending portions only, but over a great extent of surface. In the yellow fever of Philadelphia of 1820, the liver, according to Professor Jackson, was found to vary in appearance, never constantly presenting the same aspect. It was usually gorged with blood, but not always. The gall-bladder was sometimes distended with bile, which was of the colour and consistence of tar. The spleen and pancreas were usually natural. It is stated, on the authority of Professor Physick, that the liver was rarely found much diseased; but the stomach was always inflamed, and gangrenous in parts. In the yellow fever of Gibraltar of 1828, the greatest care was taken in the examinations. The lesions, met with, were divisible into two classes,—some of them peculiar, or almost exclusively peculiar, to subjects dying of yellow fever; others common to those subjects and to such as had died of acute diseases;—the red or black matter found in the alimentary canal, and the remarkable alterations of the liver described below, being of the first class; all other lesions of the second.

The red or black matter of the stomach and intestines not having been found in all the cases of yellow fever could not, of course, be esteemed an anatomical character of the disease. The alteration of the liver was, however, the same in all cases; but varying in degree, and, for this reason, it was considered, by M. Louis, as the essential anatomical character of the yellow fever of Gibraltar of 1828. Two cases, indeed, were presented to the commission as instances of yellow fever, in which this diagnostic lesion did not exist, but it was clearly shown, that they did not belong to the epidemic. The alteration of the liver consisted in a discoloration,—the organ being sometimes of the colour of fresh butter, sometimes of a straw colour; at others, of that of coffee and milk; at others, of a yellowish gum or a mustard colour; and lastly, at times, of an orange or pistachio colour. This discoloration was not the same through the whole liver. It was more marked, and also more uniform, in the left than in the right lobe. In cases in which it was uniform in the left lobe, there was, in the right a mixture of gum-yellow, orange or red points of different sizes; or else a rosy tint, which did not exist in the left lobe. Along with this discoloration, there was a paleness and a diminished quantity of blood, so that wherever this appearance of the liver was marked, the sections of it were dry in the left lobe. It reminded the observers, at first, of the greasy or fatty transformation of the liver, which is always, however, accompanied by more or less softening. In these cases, the cohesion of the liver was not at all diminished, even when the organ

was of a clear coffee-and-milk, or of a straw-yellow colour, or of the colour of sole leather. In several other cases, indeed, the consistence of the organ was augmented.

M. Louis considers, that in the present state of our knowledge, it is impossible to determine the nature of this alteration or its cause. The anæmic state of the liver was the more remarkable, as no other viscus was found in the same condition, and many, as the lungs and stomach, contained a greater quantity of blood than usual. He does not regard it as the product of inflammation; for, in almost all cases, the organ preserved its ordinary size; its firmness was as great as usual, and it contained less blood than in its natural state—characters, which, he justly remarks, are the reverse of those of inflammation, especially of acute inflammation, as this might be supposed to be. It cannot, M. Louis thinks, be attributed to hemorrhage from the intestinal canal, as this did not take place in the cases where the hepatic lesion was met with; and, for the like reason, it could not be referred to derivation produced by the inflammation of the mucous membrane of the stomach or duodenum. All his observations induced him to consider, that the commencement of the hepatic lesion is synchronous with that of the disease, or that it occurs shortly after it;—that the liver is the only organ constantly, and more or less uniformly, altered in the subjects who died of the yellow fever of Gibraltar, whose bodies were examined; and that as this alteration is not found in persons dying of other diseases, it must necessarily be regarded as the anatomical character of yellow fever. This character, the commission thought to be so much the more worthy of their attention, as, in the cases where no black matter was found in the stomach and intestines, there was no other means of distinguishing the bodies from those of individuals who had died of other acute diseases.

From his necroscopic examinations of this fever, M. Louis concludes, that it was not a gastritis; that the different lesions of the mucous membrane of the stomach were secondary or accessory, and that in cases where they were met with, they were probably developed at a certain period after the commencement of the disease. He is of opinion, however, that the disease had a particular influence on the development of gastritis, since it was more frequent, and came on nearer the commencement of the principal disease, with which, in some cases, it would appear to be confounded, than in any other acute affection. Except in one case, in which some of Peyer's patches near the cæcum were slightly tumefied, there was no affection of the glands of Brunner and Peyer in the Gibraltar epidemic.

In the yellow fever of Texas, although functional derangement, suspension of the biliary secretion, existed uniformly, the anæmic condition, and light colour of the liver, were found by Dr. Ashbel Smith in three cases only out of seven. In the yellow fever of Martinique, from 1838 to 1841, M. Rufz observed the yellow colour of the liver in only 2 of 3 cases. In one hundred and fourteen examinations, made by Dr. Dowler, of New Orleans, the organ was of a yellow, orange, lemon, straw, brass, gingerbread, or cork colour in 54; in the remainder of the cases it presented various shades of yellow and milky,

nutmeg and straw, brown and yellow, bronze and reddish, pale-brown and mahogany, chocolate, mahogany and white, flaxseed, dark and greenish. On the other hand, M. Catel found the yellow colour in the whole of 150 cases examined in the hospital at Martinique, and M. Dutrolean, a distinguished naval surgeon, did not find it absent once in more than one hundred cases of the same epidemic. Their researches are, consequently, confirmatory of the results obtained by M. Louis; and a single case, which fell under the care of an able and zealous pupil of that gentleman, who is one of the physicians to the Pennsylvania Hospital, Dr. Stewardson, led to a similar inference. The following interesting conclusions are drawn by Dr. Stewardson, in regard to the similarities and discrepancies, which exist between the morbid appearances observed by M. Louis in yellow fever, and those observed by him in remittent fever, and which were briefly referred to under that head:—"In both, the organs contained in the cavities of the chest and cranium were found either entirely healthy, or the seat only of such secondary changes as are common to many acute affections, if we except the frequent occurrence in yellow fever of certain blackish spots or masses in the lungs, dependent in great measure upon the exhalation of blood into their tissue, and also the frequent destruction of the epidermis of the œsophagus in the same disease. In both, the liver was in every case, the seat of a peculiar alteration, having certain common characters, but strikingly different in the two diseases. In both, the stomach was, in the great majority of cases, inflamed, whilst the remainder of the intestinal canal, the mesenteric glands and kidneys, were healthy, or nearly so. On the other hand, we find no less striking differences. Thus, in yellow fever, the liver without much alteration of size or consistence, was yellow, anæmic, with but little bile in the gall-bladder, whilst in remittent it was generally enlarged and flabby, and always of a dark colour more or less resembling bronze, with the gall-bladder for the most part fully distended. In yellow fever, the stomach, or some part of the intestinal canal, mostly contained a fluid black matter, which was absent in remittent. The spleen in yellow fever was healthy or nearly so, whilst in remittent it was the seat of extreme softening and enlargement. A consideration of these three points of difference seems to me to be of the last importance in determining the question of whether yellow and bilious remitting fevers are distinct diseases. That they are so is now, perhaps, the most generally received opinion, derived from a comparison not merely of the difference of symptoms, but of the circumstances of their origin and prevalence, and if to these we add the differences in the post-mortem appearances above-mentioned, scarcely a doubt, I think, can be entertained but that this opinion is correct. The enlargement and the softening of the spleen in the bilious remitting and other types of fever originating from marsh miasmata is a prominent fact attested by most writers who have investigated the pathological appearances of disease in warm climates; and this fact alone is almost sufficient to convince us that yellow fever, in which the spleen rarely presents any considerable traces of disease, must be essentially distinct in its nature and origin. The very oppo-

site conditions of the liver and of the biliary secretion are worthy of especial attention, in reference to the present question, especially as the increase of this secretion in the one disease, and its diminution in the other, are severally characteristic of them throughout their whole course, as shown by an appeal to symptoms."

The anæmic condition of the liver has not been observed in all epidemics of yellow fever. In that of Philadelphia of 1820, it is said by Professor Jackson to have rarely presented the same aspect, but to have been usually gorged with blood; the whole system of the vena portæ was, indeed, distended with blood, which remained fluid for several hours after death, when contained in the vessels, but when removed from them, immediately coagulated. The fluid state of the blood was likewise observed by Dr. Josiah C. Nott, in the yellow fever of Mobile. When set aside, it coagulated at intervals, varying from 15 or 20 minutes to 36 hours. This condition of the blood is not, however, peculiar to yellow fever. The author, not long ago, had an anomalous case in which the blood of the encephalic vessels flowed freely fifteen hours after positive death, and coagulated in the skull cap into which it was received. It is proper, also, to remark, that in the yellow fever of Galveston, according to Dr. Ashbel Smith, the glands of Peyer and Brunner were sometimes greatly developed; and Dr. Kelly, of Mobile, affirms, that in cases that assumed "a typhoid type, enlargement and softening of these bodies have been present."

Dr. Nott, who has witnessed five epidemics of yellow fever in Mobile, in 1837, 1839, 1842, 1843, and 1844, affirms, as the conclusive result of his necroscopies, that the lesion of the liver described by M. Louis is not more constant in the yellow fever of Mobile than other lesions; and remarks, as worthy of notice, "that there is a marked difference in the frequency of this lesion in different epidemics" there. He farther states, that he has seen "Louis' liver" in cases in which there has been no other mark of yellow fever; and M. Chervin, in a report on the memoir of M. Ruzf on yellow fever, affirms "that this organ,"—the liver,— "shows not unfrequently a yellow colour in the remittent and intermittent fevers of hot climates."

Professor Harrison, too, of New Orleans, has never seen any lesion of the liver, that could be attributed to the disease. No organ of the body presented such various appearances—at times, being very dark; at others, presenting a yellow aspect. The liver sometimes contained less blood than is usually found in the viscus, and in these cases it was paler and drier than usual. At other times, however, it was engorged with blood, and bled freely when cut; "but these appearances it is subject to, in common with all the organs, and the existence of one or the other appears to depend much upon the condition of the patient at the time of the attack, and the treatment he has undergone." In cases in which the lancet was used freely, the liver was generally found of a pale yellow.

From all the pathological evidence thus far afforded, the condition of the liver described by M. Louis cannot be regarded as pathognomonic of yellow fever. M. Ruzf is undoubtedly an accurate and experienced observer, and if the peculiarity of liver described by M.



Louis and others were really absent as often as he describes, it cannot, as M. Grisolle remarks, be considered as constituting the essential anatomical character of the disease, but only as forming a very frequent concomitant lesion.

It may be added, that according to Professor Dickson, of Charleston, the liver, in yellow fever cases, does not present any constant appearances; and frequently, so far as he could judge by the eye, it was natural; and in this last remark, he is supported by M. Chervin, Dr. Nott, and Professor Harrison. It is proper, however, to observe that M. Louis, with the propriety and candour that have always distinguished him, begs the reader to remember that his work is not a treatise on yellow fever, but a history of the epidemic yellow fever which prevailed in Gibraltar, in 1828. "All the general facts, which result from my analysis," he adds, "may not be found in other epidemics."

In regard to the nature and origin of the black vomit, or of the matter thrown from the stomach in the latter period of yellow fever, great diversity of sentiment has existed. On its first appearance, it has a turbid reddish-brown aspect, is insipid and perfectly inodorous, and settles to the bottom of any fluid with which it may have been mixed in the stomach. It presents an appearance not unlike that of coffee-grounds, and is so mingled with mucus as to be ropy, and glutinous to the feel. Sometimes it is intermixed with small streaks of blood. From examinations instituted in this city (Philadelphia) in 1798-9, it was demonstrated very satisfactorily, that the black vomit proceeds solely from the stomach. It was properly regarded by Dr. Physick, as a diseased secretion from the vessels of the stomach. Owing, however, to the great turgescence of the portal system usually met with, it has been suggested by Professor Jackson, that the hyperæmia and inflammation may be the result of this turgescence, and may be venous, and that black vomit may arise from a sanguineous effusion from the capillary extremities of the veins.

The red or black matter, found in the stomachs of those who died of the Gibraltar fever of 1828, varied in quantity from four to twenty ounces, and the deeper the colour the more abundant it was. The red matter was not usually of less consistence than the black, which presented much variety in this respect, being as thick as porridge in a great many cases, and very liquid in others. On standing, it separated into two parts—the upper more liquid and of a bistre colour; the lower, less abundant, and formed, as it were, of blackish parcels. The black matter was not mixed with clots of blood in any case, and was only once found in the stomach along with the red liquid. It was hardly doubted by M. Louis, that the black matter, when homogeneous, thick—pultaceous as it were—was partly at least composed of blood; the vessel in which it was kept and the bodies plunged in it being stained red. Dr. Nott and P. H. Lewis, of Mobile, in 1843 and 1844, found the black vomit to be always highly acid; and the former states, that a correct idea may be formed of it by treating blood with diluted chlorohydric acid, and adding to this a little gum water or flaxseed tea,

to represent the mucus of the stomach. The colour is probably owing to arterial blood mixed with the gastric secretions.

The yellow hue of the skin has likewise been a topic of examination, and of diversity of opinion. Generally, it has been supposed to be owing to the bile, or, in other words, to be of an icteric character, depending upon the deposition of bilious matter under the cuticle. It is by no means proved, however, that such is the fact, and that it may not be owing to an altered condition of the blood, which is supposed by Dr. Stevens to be the cause of yellow fever, as of the more severe remittents already described. The morbid condition of the blood Dr. Stevens regards as the first link in the chain of phenomena, for as it circulates, it acts perniciously on every fibre, and on every tissue; disturbs every function of the body, and deranges every faculty of the mind, whilst all the excretions have a morbid appearance, and the several fluids are changed both in quality and quantity. This is the explanation, which Dr. Stevens gives of all remittent fevers.

**Treatment.**—The management of yellow fever has given occasion to as much controversy as the nature of the disease; and the fact would appear to be, that it is an affection of so much malignity,—especially when it first appears in any locality,—as to set all the efforts of art at defiance, and to occasion the mortality to be terrific. But little can be added to what was said of the treatment of malignant remittent fever. All the inculcations and cautions that apply to it apply equally to epidemic yellow fever.

In the epidemic fever of Gibraltar, to which allusion has so often been made, the practice, adopted by the medical staff of the British army, bore no resemblance to that of the private practitioners of Gibraltar. The former employed, at the beginning of the epidemic, large and repeated general bleedings, but they soon modified this practice, and subsequently used general bleedings only as an auxiliary to cathartics, and large doses of calomel; these latter remedies, and, with some practitioners, mercurial frictions, constituting the main treatment. The mortality, resulting from the disease under this plan, was one in four and a half. The Spanish physicians employed bleeding very moderately, and only at the commencement of the disease; opened the bowels by gentle laxatives, or, in the advanced stage by enemata alone, and gave mercury only in a few very severe cases. The mortality by this plan was only one in six,—a proportion which led the population of Gibraltar to consider the Spanish physicians to be much more successful than the British. It is affirmed, however, that the difference was more apparent than real. All the patients, treated by the military surgeons, were—with few exceptions—robust subjects and in the vigour of life, having attained their 22d year. The male patients in the city, on the other hand, were, as a class, less robust than the soldiers, and a large part of the civic patients was composed of women and children. Now, it was found, that strength and vigour of constitution appeared to be unfavourable to recovery,—the ratio of mortality among children, as elsewhere remarked, being one in seven, that of females, one in five and a half, and that of males one in

four and a half. In comparing, therefore, the mortality of two classes of patients, these circumstances, as remarked by M. Louis, must be taken into account. Still, the management of the Spanish physicians would appear to have been judicious, and at least as favourable as the more heroic practice of the British army practitioners. It is not many years since the mixed bleeding and mercurial treatment was so universal, that no other course was ventured upon. Under the new views of pathology, of which M. Broussais was the renovator, if not the parent, a more soothing and less active system than the one usually employed was adopted by some of the practitioners of the South, as by Dr. Barton, formerly of New Orleans, in their endemic yellow fever, and the results were satisfactory. Dr. Dickson, who is of opinion, that the results of experience and observation are unfavourable to the general or frequent resort to bloodletting, and who has had occasion to bleed but four patients, two of whom died, "prefers to substitute the cold-bath, which," he says, "if I do not deceive myself, is equally effectual in subduing morbid excitement, and controlling irritation, without any positive expenditure of, or subtraction from, the vital forces;" and he adds, that he has never seen any unpleasant consequences from it. The contraindications to its use are—great age or debility, "and the rather unfrequent determination to the lungs and bowels shown by dyspnœa and diarrhœa." Should it produce protracted chilliness or other discomfort, he does not repeat it. "He," says Dr. Nott, "who is ignorant of the various types in which this Protean disease appears in different years and in different latitudes, must either not have read, or read to little purpose, the history of yellow fever. In one epidemic we are told that the lancet is the sheet anchor,—in another it is death. The difference occurs, to a limited extent, in Mobile, but the *rule* is,—beware of the lancet!"

The condition of the liver, which is considered to be the "anatomical character" of yellow fever, and seems to commence with the earliest symptoms, is, unfortunately, inappreciable, and, in the existing state of science, not tangible by our therapeutical agencies. "The discovery of the remedy," says M. Louis, "must be left to time and chance, and to the acuteness of the observer, for experience has sufficiently proved, that no dependence is to be placed on mercurial preparations of any sort."

Within the last few years, much attention has been paid in Louisiana to the effect of large doses of sulphate of quinia in yellow fever,—not administered during a period of remission, for, according to some observers, there is never a distinct remission, but in the very incipiency of the disease, whilst the morbid action is forming, and before any local lesions have occurred,—for example, within six or eight hours immediately after the appearance of the earliest symptoms. The medicine was exhibited in one very large dose of from 20 to 50 or 80 grains, and it is said to have acted almost like a charm. When taken under such circumstances, its first effects are said to be:—a very slight increase of the febrile symptoms; the pulse is perhaps quickened, the respiration more hurried, and the usual signs of excitement are present. This condition is, however, but transient, and is promptly

followed by corresponding depression. All the more violent symptoms subside; the temperature of the surface is lowered; pain is diminished; the pulse is gentle and subdued, and the skin covered with a healthy moisture;—in short, the chain of morbid associations is broken, sleep is induced, from which the patient awakes refreshed and substantially better; and within 24 or 36 hours, he is considered to be in a state of convalescence. Such have been the salutary effects of the administration of the sulphate of quinia in the practice of many,—as of Drs. Hunt, Beattie, Farrel, Mackay, and others; but Dr. W. A. Van Buren, of the United States Army, never witnessed any decided and permanent good effects from it; and in the hands of others it has failed signally. Dr. Kelly, of Mobile, has employed it in every stage of the disease, and in sufficiently large doses, “but with very doubtful advantage excepting during the apyrexia, and in cases uncomplicated with any local determination.” When injudiciously administered, it appeared to him to hasten the occurrence of the black vomit.

Under the view, embraced by Dr. Stevens, which has already been referred to,—that yellow fever is dependent upon an altered condition of the blood, in which there is a deficiency of saline matters, he administers saline medicines freely. When these agents—not purgative—chlorate of potassa, for example—are employed, they do not, he says, irritate the stomach; they act upon the intestines as much as is necessary; keep up all the secretions, particularly that of the kidneys, and enough is absorbed to enter the circulation, prevent the dissolution of the blood, and preserve it until all fever abates, and the danger is past. This plan, it need scarcely be said, is intended to be soothing and unirritating, which, after all, is generally the best course—as we have seen—that can be adopted in all the forms of remittent fever.

The prophylactic recommendations of Dr. Dickson, for one who wishes to reside in a town where yellow fever prevails, are judicious. He must select his lodgings in an open and dry district; sleep in a chamber well ventilated, and elevated two or three stories from the ground; remain under shelter and at rest during the heat of the day, shun all exposures to night dews or rain; and be strictly and uniformly temperate in all things. Low diet, bleeding, and cathartics are injurious rather than salutary, as tending to reduce the system below the point of healthy action, and diminishing the power of resisting noxious agencies. A mercurial course, formerly fashionable as a preventive, is now seldom thought of. “It is entirely useless, and worse.”

## SECTION IV.

### ERUPTIVE FEVERS.

SYNON. Exanthematica, Exanthemata (of some), *Fr.* Exanthèmes.

Under the head of “*eruptive fevers*,” may be comprised those cutaneous eruptions that are essentially associated with fever—the diseases of the skin, that are accompanied by a lesion of circulation. By

many writers the various eruptive fevers have been classed under two heads:—the *major exanthemata*, and the *minor exanthemata*; but they differ so essentially from each other, according to the definitions usually given, that this arbitrary division has been very properly rejected by most pathological writers. Thus, the major or genuine exanthemata are said to have the following characters: *First*, They are marked by the presence of fever, which runs a defined course. *Secondly*, They are attended with an eruption, which, like the accompanying fever, goes through a regular series of changes. *Thirdly*, They occur to every individual once, and once only, during life; and *Fourthly*, They arise from specific contagion. Under this head are classed—*small-pox, chicken-pox, cow-pox, modified small-pox, measles, and scarlet fever*. The minor exanthemata are vaguely affirmed by Dr. Geo. Gregory to comprise “a few other diseases of lesser importance,” which are allied, in some respects, to the others—as *herpes, urticaria, lichen, roseola, pompholyx* and *frambæsia*.

It will be at once seen, that as regards the individual diseases thrown together as major exanthemata, great doubts must exist as to their possessing the characters that have been assigned to them; and the best pathological division would seem to be,—to separate those cutaneous affections, of which fever forms an essential accompaniment, from those in which the disease appears to be of a chronic character, and to be essentially local, and seated in the skin:—the morbid action either being dependent upon a vicious condition of the blood, or upon nutritive or secretory irritation or aberration in the intimate tissue of the derma.

It has been a question amongst pathologists as to the pathological relation between the fever and the eruption. In most cases, it will be found, that the former precedes the latter, but it by no means follows, that they always stand towards each other in the relation of antecedent and relative. The ancients had no more difficulty with these than with other fevers. In the more simple forms of fever, they believed, that a morbid or peccant humour—a cause of ferment—existed in the system, which had a period of crudity and of concoction; and that, when properly matured, it was thrown out of the economy by some favourable crisis; hence, their doctrine of critical discharges. In the case of eruptive fevers, they appeared to have still stronger support for their doctrine,—the morbid matter being thrown out on the cutaneous surface. They lost sight, however, of the important fact, that in the case of certain eruptive fevers, the fever, instead of being relieved by the appearance of the eruption, appears to increase, and that in many there is no throwing out of humour—the eruption being a mere efflorescence. Other pathologists regard the exanthemata to be true phlegmasiæ of the skin,—and others, again, peculiar and essential affections of the derma—not of the epidermis, as strangely affirmed by one writer of eminence, Dr. Mackintosh; that the resulting phenomena are secondary, and dependent upon the sympathy existing between every part of the dermoid structure,—skin and mucous membranes; whilst others, again, are of opinion, that the eruption ought to be esteemed a mere symptom—functional expression—of this class of

diseases, and that the primary affection is seated in the mucous membranes, the nature of which is inflammation, more or less acute and extensive; and that the part generally most implicated is the mucous membrane of the lungs, especially in measles and small-pox; whilst that of the bowels is chiefly, if not wholly affected in urticaria, roseola, and miliary fever. That these diseases belong properly, however, to general fevers rather than to the phlegmasiæ, is sufficiently confirmed by the researches of MM. Andral and Gavarret, who found, that the blood in these fevers presented the same alterations as in other pyrexia;—in other words, when simple, there was never an increase of the fibrinous element as in the phlegmasiæ. Commonly, its quantity was the same as in health; whilst, at times, it was sensibly diminished, especially during the eruptive stage.—But the special alterations of the blood will be described under the various eruptive fevers.

Lastly, others, again, but they are now few, consider most of these fevers to be modifications or combinations of gastro-enteritis. Thus, gastro-enteritis is asserted by M. Broussais to be the necessary precursor of small-pox; ophthalmia, coryza and bronchitis to be precursors of the rubcolous eruption; gastro-enteritis, alone or accompanied with angina tonsillaris, the precursor of scarlatina;—the visceral phlegmasiæ constituting the whole danger of these diseases. “But small-pox”—adds the writer just cited—“is distinguished from the two others by the intensity of the cutaneous inflammation menacing the external parts with frightful disorganizations, such as ophthalmia and abscesses; and tending to renew the visceral phlegmasiæ, at a period when the forces, being already much diminished, have a difficulty in effecting a gradual resolution, and the repulsion of the irritation towards the excretory organs. Here are, hence, two indications proper to this disease,—that of moderating the inflammation in the tissue of the skin; and that of recalling it towards the exterior by revellents, when it appears to have a tendency to a premature repercussion. The other indications, the principal of which is, to facilitate the eruption by moderating the excess of visceral inflammation at the commencement, are common to all the eruptive phlegmasiæ.” According to these views, the eruption is regarded as a natural effort to direct the irritation towards the cutaneous surface; and hence, it has been affirmed by Dr. Mackintosh, that it ought to be looked upon as a “natural blister, acting as a contra-irritant,” and to be produced by powers inherent in the constitution, that enable it to remove so much of the diseased action from an internal organ, the functions of which are more immediately necessary to life. That the whole of the dermoid tissue is in an unusually impressible and impressed state can scarcely admit of a doubt; but the cause of the difference of the eruption in these different cutaneous diseases, and of the implication of various portions of the mucous membrane, is not more easily explained than the appearance of buboes and carbuncles in typhus; of the *taches rouges* in typhoid fever, or of petechiæ in typhus.

The tardiness in the appearance and progress of the eruption—especially the non-filling of the pustules, or their premature subsidence in small-pox—is generally regarded as an unfavourable symptom; and

they who believe that the eruption is a natural counterirritant, would ascribe the mischief to the vital powers not being able to duly establish the necessary amount of cutaneous counterirritation. Yet this condition of the pustules very generally accompanies cases of confluent smallpox; in which the extent of counterirritation would appear to be greatest. In the most favourable cases, there is the least amount of internal inflammation, and, at the same time, of cutaneous irritation.

There is something strange and unaccountable in the whole history of the more prominent of the eruptive fevers:—Take, for example, small-pox; its capability of being propagated, with almost unerring certainty, by inoculation;—the subsequent appearance of the eruptive fever, which can be foretold with accuracy, as well as that of the eruption; the regular progress of the pustules to maturation; the fever of maturation; the disappearance of the disease at fixed periods, and its strictly self-limited nature, are all points, which are known to appertain to it, and many of them to other exanthemata; yet the cause of all these phenomena, thus exhibiting themselves, and regulated according to definite laws, is in the present state of science, beyond our knowledge.

One of the most ingenious views has been propounded by Liebig. It is a modification of the doctrine of fermentation, so generally embraced by the older physicians. Liebig ascribes the morbid phenomena that result from the reception of certain animal poisons into the blood to a process resembling fermentation. Yeast consists of gluten, whose elements are in a state of motion; and when this is added to sweet wort, which contains, amongst other matters, sugar and gluten, it induces a motion of their particles: the elements of the sugar arrange themselves into other forms,—as alcohol and carbonic acid; and if there were no gluten in the compound, the yeast would entirely disappear; but the gluten of the wort is likewise acted upon, and it is gradually converted into yeast, which mixes with the carbonic acid and rises to the surface; so that when the process is finished, thirty times as much yeast has been produced as was added to the wort. Now, when small-pox matter is added to the blood of one who has not had the disease, it acts, according to Liebig, like the yeast in the sweet wort; and reproduces itself in an infinitely larger quantity. In order, however, that such reproduction should occur, it is requisite, that some material, analogous to the gluten of the sweet wort, should be present in the blood, and that it should have a definite relation to the morbid poison. Should this ingredient be necessary to life, the poison that changes it is fatal. If the material do not exist, the poison produces no effect,—the person remains in health; and if the material be naturally present, it is exhausted and destroyed, at least for a time, and perhaps altogether, so that the person is less susceptible of the same disease in future; or may be entirely steeled against it.

The views of Liebig on this point must be admitted to be exceedingly ingenious, and his whole exposition of them is worthy of the attention of the scientific physician. They have, indeed, been embraced by a recent intelligent writer and observer. "These views,"

says Dr. Watson, "come recommended by the authority of a consummate chemist. They furnish a plausible explanation of the main facts of the case; namely, that the disease is produced by an animal poison; that the specific virus increases prodigiously in quantity within the body during the progress of the disease; and that the susceptibility of its influence in that individual is thereby somehow exhausted. I entertain the theory, therefore, until a better one is propounded. It has the incidental merit, that it involves no risk of practical error."

Instead, however, of speculating upon these points, we pass to the results of observation in regard to the laws that regulate the propagation of these fevers, and the morbid phenomena presented by them individually; on which points we possess numerous and interesting facts. In their character as to mildness or malignity, almost all these diseases are materially modified by the nature of the prevailing epidemic; they vary, too, in particular constitutions; and the difficulty in their management is greatly dependent upon the difficulty in appreciating those points. "The treatment of these diseases," observes Dr. Marshall Hall, "does not depend merely upon the question, whether it be rubeola, or scarlatina, or other eruptive fever; but upon the question, whether the disease, be it what it may, be complicated with internal organic changes, or modified by constitutional circumstances. These are the really important points for diagnosis, the important questions on which recovery or death depends; and I do not hesitate to say, that, in these respects, but especially in that of the complications, the subject is involved in the most intense obscurity, and offers ample scope for investigation. If there be anything *peculiar* in these complications, that *peculiarity* is completely unknown, and must be established by new examinations. If such peculiarities of morbid change require peculiarities in the treatment, this too remains to be ascertained by future inquiries. It has not even been ascertained, whether the affection of the mucous membranes be merely inflammatory, or whether it be specific; that is, whether it be rubeculous in rubeola, and scarlatinous in scarlatina, as it is variolous in variola. But I believe it is so. The observation applies not to the eyes, fauces, larynx, trachea, and bronchia only, but also to the stomach and intestines."

Many of the eruptive fevers are apt to leave behind them morbid conditions, which require particular attention. These consequences or sequelæ are indeed, at times, of serious import. They will be indicated under the particular diseases.

The mortality from eruptive fevers is very great. Small-pox, measles, scarlatina, and erysipelas, proved fatal, throughout England and Wales, to 29,787 persons in the year 1838; and to 31,533 in 1839. (W. Farr, in Third Annual Report of the Registrar-General, 1841.)

In the consideration of the various eruptive fevers, the arrangement will be followed, which was adopted in investigating the chronic cutaneous diseases;—taking the elementary form of the eruption as the basis of the classification.



## I. EXANTHEMATOUS ERUPTIVE FEVERS.

## 1. MEASLES.

SYNON. *Rubeola*, *Enanthesis rubeola*, *Morbilli*, *Febris morbillosa*, *Typhus morbillosus*, *Phœnicismus*; *Fr.* Rougëole, *Fièvre morbilleuse*; *Ger.* Masern, *Masernkrankheit*, *Kleine Pest*.

Confusion has arisen amongst nosographers in regard to the names assigned to measles at the present day. In this country, and in Great Britain, both *rubeola* and *morbilli* mean measles; but in Germany, *Morbilli* is the technical term applied to measles, whilst *Rubeolæ* is what they term *Rötheln*, on which it will be necessary to make some remarks hereafter. It is only in comparatively modern periods, that any clear distinction has been pointed out between the three great eruptive diseases,—*small-pox*, *measles*, and *scarlatina*. Of old, *small-pox* and *measles* were universally confounded; and Rhazes was, perhaps, the first to distinguish them. Even within comparatively recent periods, the lines of demarcation between measles and *scarlatina* were far from being distinctly drawn. At the present day, little difficulty is experienced on this head.

**Diagnosis.**—Measles has been divided by some pathologists, as by Drs. Willan and Mackintosh, into four varieties,—*Rubeola vulgaris*, *R. sine catarrho*, *R. nigra*, and *R. putrida*. Others, as Dr. Geo. Burrows, have described the more ordinary form of measles under *rubeola vulgaris*; the one in which the morbid action is limited to the skin, under *rubeola sine catarrho*; and that in which the intensity of the poison is manifested by the most malignant symptoms, under *rubeola maligna*; whilst many of the German writers,—C. A. Tott and Most, for example,—in their unnecessary and bootless anxiety to embrace every variety that may offer, have made more numerous divisions still.—1. *Morbilli simplices, mitiores, catarrhales, Febris morbillosa simplex*—the simple, favourable, or catarrhal measles. 2. *Morbilli inflammatorii, hyperstenici, Morbilli cum febre inflammatoriâ*, inflammatory measles. 3. *Morbilli nervosi cum febre neuropathicâ*, measles with erethitic nervous fever. 4. *Morbilli putridi cum synocho putrido, Morbilli maligni*, (*Morton*.) the putrid measles. 5. *Morbilli gastrici, Morbilli cum febre gastricâ*, gastric measles; and *Morbilli spurii*, false measles. These divisions are enumerated, not that they should be embraced, but avoided. No advantage, indeed, can result from them; for, in all cases of the genuine disease, it is measles modified by particular circumstances, as by the nature of the epidemic, the constitution of the patient, and the internal organs more prominently implicated.

Usually, an attack of measles is preceded by premonitory or prodromic symptoms, which are chiefly characterized by an engorged or inflamed state of certain of the mucous membranes, as of the eyes, nasal fossæ, and bronchia. There are the usual phenomena of catarrh, with profuse watery discharges from the nose and eyes, and distressing cough. The symptoms of catarrhal fever continue from two to three days, when they become increased in violence; the fever is intense; nausea and vomiting often supervene, and the epigastrium is painful on pressure. The eyes become more sensible to light, and inflamed;

the cough is dry, and frequent, and is accompanied with hoarseness, dyspnœa, and a feeling of tightness across the chest. About the third or fourth day from the invasion of these symptoms, the efflorescence makes its appearance under the form of small red spots, distinct from each other, circular, slightly raised above the surface, and of the shape and size of flea-bites. It is first of all seen on the head, around the margin of the hairy scalp, behind the ears, and about the temples; then on the forehead, nose, cheeks, and neck, whence it spreads, in the course of the same, or of the next day, to the chest and limbs. The patches, formed by the confluence of the red spots, are at first small, but they gradually enlarge, and assume a semilunar or crescentic shape. At the end of about thirty-six hours, the eruption arrives at its height; and, commonly, in about five days from its first appearance, the tumefaction of the cutaneous surface disappears, and the eruption fades away in the same order as it advanced: the oppression and cough, and the other signs of disturbance in the economy yield, and finally disappear; and the cuticle soon separates in the form of scurf, or of small branny scales: a troublesome itching supervenes in the parts of the cutaneous surface that had been implicated, and the catarrhal symptoms fade away, leaving the patient suffering only under the debility induced by the previous attack. This is the usual course of the mild form of the disease, but it varies;—for example, the eruption occasionally appears upon the body first, and afterwards upon the face; and after declining it is sometimes reproduced; but these and other anomalies will be readily appreciated by the observant practitioner.

During attacks of epidemic measles, it not unfrequently happens, that the eruption goes through its stages without the ordinary catarrhal symptoms, and with little or no fever. It does not appear that this certainly protects the person from a subsequent attack of measles, and hence it is questionable, whether it ought to be esteemed genuine measles, and whether it be not rather an abortive effort of the epidemic cause of the disease.

A malignant or putrid variety of measles, which has been called *Rubeola maligna*, may certainly exist both sporadically and epidemically. Of the latter form we have the history of numerous examples by Huxham and Sir William Watson. The disease appears to be of a congestive character, and to require a treatment similar to that which has been laid down under CONGESTIVE FEVER. It generally assumes a low character, and signs of hyperæmia or inflammation may be detected, by careful examination, in some important internal organ. In some of these cases, reaction does not take place; or, if it does, the pulse remains feeble and oppressed, perhaps quick; and the surface is free from the redness and heat which so strikingly characterize ordinary measles. In other cases, the symptoms are violent from the first, and the eruption comes out irregularly, receding perhaps and reappearing in irregular patches over the body, at one time red, and at another pale or livid, and interspersed with petechiæ or vibices; the mucous membrane of the tongue and fauces assuming a dusky red or livid colour, and great gastric distress, diarrhœa and meteorism being

concomitants. The brain or the minute bronchial tubes are now attacked with inflammatory hyperæmia, and the patient often sinks rapidly, under all the signs of typhus accompanied or not by those of typhoid pneumonia.

Lastly, during the existence of epidemic measles, the disease would seem to occur occasionally without the eruption. This appears to be paradoxical, and it would not be easy to establish, perhaps, that it was really measles. In an epidemic, which occurred in Germany, at the end of 1800, and the beginning of 1801, several children, according to Consbruck, were supposed to go through the disease without the eruption, and the same circumstance has been observed in epidemic scarlatina.

In his examination of the blood in measles, M. Andral found the proportion of fibrin to be the same as in health—3 parts in 1000. In many adults it was not more than from  $2\frac{1}{2}$  to  $3\frac{1}{2}$ . This mean persists at the commencement of the disease; but after the eruption, and especially in the adynamic state, there is a tendency to a diminution of this principle. The proportion of the blood corpuscles is, however, augmented above the normal, which is 127 in 1000. M. Andral has seen them raised to 137, 140, and 146. These modifications of the blood are very different from those observed in the phlegmasia, in which there is augmentation of the fibrin, which may exceed 10 in 1000, without any increase in the proportion of corpuscles. So far, therefore, as the state of the blood affords an element for discrimination, measles is properly classed with the pyrexia or general fevers, not with the phlegmasia.

The urine varies with the varying stages of the disorder. In most cases, it resembles, more or less, the inflammatory type. M. Becquerel states, as the result of his observations, that it is generally inflammatory at the commencement of the febrile period, becoming subsequently very dark, and of high specific gravity, and frequently depositing a sediment of uric acid. A small quantity of albumen was found in a few of the cases. During the eruptive period, the character of the urine changes. If the eruption be slight, and there be not much fever, it resumes the normal type. If the contrary be the case, it retains the inflammatory appearance. He did not meet with a case in which it was turbid or sedimentary towards the close of the eruptive stage. During the period of desquamation and convalescence, it either returns at once to the normal state, or continues turbid and sedimentary for some time, or becomes pale, clear, and anæmic. In three cases, anasarca supervened during convalescence, but the urine did not contain albumen.

The sequelæ of measles are, in many cases, as dangerous as the disease itself, and hence great care is needed in the after treatment. In scrophulous children, the lymphatic ganglions are apt to become affected;—hence, troublesome inflammations of the glands of the neck, and tabes mesenterica; or the eyes may be affected with ophthalmia, difficult of cure, and the foundation be laid for the formation of tubercles in the lungs; or if they have been already there, and in a state of

quiescence, they may—if the age and other circumstances of the patient be favourable—be excited to softening.

Occasionally, after measles, a true purulent secretion takes place from the lining membrane of the bronchial tubes. A case of this kind, which fell under the author's care in the Baltimore Infirmary, excited great interest from the quantity of pus that was expectorated, with the absence of every physical sign of a cavity in the chest. On dissection, it was clear that the whole of the secretion had been furnished by the bronchial mucous membrane. At times, too, especially in the summer season, about the time of the recession of the eruption, dysentery, of the most fatal kind, supervenes, which may run its course most rapidly. In an epidemic measles, which prevailed in Virginia, fourteen or fifteen years ago, several cases of this kind occurred, which were of the most intractable character.

Epidemic measles is very apt to be succeeded, especially in children's asylums, by stomatitis, which not unfrequently assumes the gangrenous form, and is very disastrous in its results. It has often prevailed to an afflicting extent in the children's asylum of the Philadelphia Hospital. An analogous kind of ulceration has likewise been seen in the external sexual organs of the female.

These are amongst the most prominent and troublesome sequelæ.

The general prognosis of measles is tolerably favourable. It proves fatal, however, to a great number. In the year 1838, according to Mr. Farr's letter to the Registrar-General, the number of children who died of measles, in England and Wales, was 6514; and in 1839, 10,937;—a greater mortality than from scarlet fever, during the same years. If the year 1840, however, be added, scarlatina has the preponderance. (See SCARLET FEVER.) According to the bills of mortality of Philadelphia, the deaths from measles, from 1818 to 1841 inclusive, were 1376; while those from scarlatina were 2226. According to Dr. Condie, during the ten years preceding 1845, 574 deaths occurred in Philadelphia, from measles, in children under fifteen years of age;—93 in those under one year; 158 in those between one and two; 253 in those between two and five; 59 in those between five and ten; 6 in those between ten and fifteen; and 8 in persons beyond that age. The deaths from measles and scarlatina comprised rather more than one-ninth of the whole number of deaths, within the same period, in individuals under fifteen years of age.

During the eruptive fever, and until the period of the subsidence of the eruption, but little uneasiness need generally be entertained in regard to the cough, dyspnoea and other pneumonitic symptoms. Still, if they be more severe than usual, an observance of the physical signs should be associated with that of the functional phenomena; and still more is this necessary, if the symptoms do not diminish with the diminution of the eruption. Danger may, in such case especially, result from the pneumonia. The signs of unfavourable import are those that denote serious implication of the encephalon, or the supervention of the typhoid or typhous symptoms before mentioned.

It is a common remark, that the disease is more fatal to adults than to children, but this view is not assented to by all. The author's ob-

ervation does not enable him to pronounce positively on this matter, nor is it easy for any one to do so, inasmuch as the cases occurring in adults are comparatively rare, and the difficulty great, therefore, in establishing a ratio.

Measles cannot easily, except at the commencement, be confounded with any other epidemic exanthem, except scarlatina. At the very first appearance of the eruption, it may be impracticable to distinguish it from variola; but the doubt soon disappears by the gradual increase in the prominence of the eruption, if it be the latter. The accompanying catarrhal symptoms are also a part of measles, whilst they are accidental in small-pox. These likewise form a means of diagnosis between scarlet fever and measles;—in the former, the accompanying symptoms being those of amygdalitis rather than of catarrh. The eruption, too, of scarlet fever is a diffuse lobster redness, the spots being extremely large; and they do not—as in measles—leave between them numerous small irregular spaces in which the skin preserves its natural colour. There is a difference, also, in the desquamation of the cuticle, in measles and in scarlet fever; in the former, it takes place in branny scales; in the latter, in large pieces. The circumstances, too, of the existence of an epidemic of one or the other, and of the probability of exposure to its influence, will aid in the diagnosis.

**Causes.**—The origin of this disease is not more known than its cause. Like small-pox, it appears to have been of Eastern origin, and, according to Dr. Williams, in the works of the Arabian writers, it is not described as new or unusual. By many, it is supposed to have spread from its first seat by communication from one person to another, and in this way only. It would be singular, however, if no combination of influences could occur, capable of generating it sporadically;—if, in other words, the same combination could not take place at this day, which, of old, engendered the disease originally. This difficulty, with the impracticability of tracing it to any particular source, has led to the belief, that a “morbillous poison is always in existence, and ready to infect the predisposed.” It would certainly appear, that the disease can, and does, originate *de novo* without our being able to presume, that it has been imported into the locality where it prevails; yet it is affirmed, that it was not known in the new world until it was imported in 1518, and, so far as the author’s recollection goes, it is stated to have been unknown in New Holland.

The common—almost universal—belief is, that, when once induced in an individual, a poison is generated, which can cause the disease in one who has never been affected, either by contact or by diffusion through the atmosphere. To establish the fact of the first mode of propagation, inoculations have been practised with blood drawn from the arm of a patient, or with serum taken from the vesicles that are associated with the characteristic eruption, or from the tears; and these inoculations are said to have entirely succeeded. In a very malignant and wide-spread epidemic of measles, in the winter of 1841, M. M. Von Katona of Hungary inoculated 1222 persons with a drop of fluid from a vesicle, or with a drop of the tears of a patient with

measles. It failed in 7 per cent. of those on whom it was tried ; but in all the rest the disease occurred in a very mild form, and not one of them died. At first, a red areola formed around the puncture, but this soon disappeared ; on the 7th day, fever set in, with the usual prodromic symptoms of measles ; on the 9th or 10th, the eruption appeared ; on the 14th, desquamation commenced, with decrease of the fever and eruption ; and by the 17th, the patients were almost always perfectly well.

Yet the communicability of measles from one person to another is not assented to by all, as has been affirmed by Dr. Geo. Burrows, and by MM. Guersant and Blache and others. It was denied by a practitioner of great experience, Professor Dewees, of Philadelphia, but evidently on insufficient grounds. In the cities, it is a difficult task to decide whether any disease extend by contagion, especially when it prevails epidemically ; but, in country places, opportunities often exist, which establish the fact incontestably. Thus, when the author was Professor of Medicine in the University of Virginia, one of the students left his boarding-house to visit his friends, who resided about forty miles distant. When he arrived there, he found, that measles prevailed extensively, and he himself was exposed to the contagion. He returned to his boarding-house, and, in a few days, the eruption of measles appeared, and went through its stages in the regular course. One or two persons in the house were likewise attacked : but, by great care, it extended no farther ; and no other case appeared within many miles of the University. This case established unequivocally the fact of communication, and many such must have occurred to those who are extensively engaged in country practice.

It is a point of interest to determine at what period the disease ceases to be communicable. This is not established : there is every reason to believe, however, that there is no safety until the desquamation of the cuticle has terminated. The separation of the healthy from the sick ought, therefore, to be continued for at least three weeks.

It has been elsewhere remarked, that in order for endemic fevers to prevail extensively, there must be a favouring condition of the atmosphere ; and, therefore, they ought rather to be termed endemico-epidemics. A similar remark applies, also, to the communicable exanthemata. Were the conditions always favourable for their spreading, they would be constantly rife, and to the same degree, in a community ; whereas, it is well known, that the bills of mortality of cities often indicate no fatal cases for months ; and, at times, even for years ; whilst, at other times, the number of deaths is appalling. To spread extensively, these diseases require a union of atmospheric and contagious influences, or they are endemico-contagious in their nature.

After the contagious miasm has impressed the system, it remains for a time without affording any indications of its presence. The time that elapses between its reception and the commencement of the eruptive fever is termed in this, as in the other contagious diseases, the *latent period* or *period of incubation*. This is by no means as fixed as in small-pox, and would appear from the results of different observers to vary from six to sixteen days. According to MM. Rilliet and

Barthez, it generally required an exposure of from five to twenty-five days in the wards, before children exhibited the eruptive fever. The author, some years ago, saw a case of measles in a new-born child, the mother of whom was unaffected,—having had the disease in her infancy. It was prevailing in the house. Numerous cases are on record, in which children have had it at, or soon after, birth, when the mother herself was at the time affected.

It does not often happen, that persons are attacked with the disease twice in the course of their lives; yet, such cases are observed: the author has met with three or four. Mr. Erasmus Wilson affirms, that one point of difference between measles and scarlatina is that the former “frequently [!] attacks the same person twice,” whilst the latter rarely does.

Measles attacks all ages, and prevails at all seasons, yet there must be a greater predisposition to it in some than in others; for we frequently observe persons who have never had it pass through epidemics unaffected; and, again, if those same persons escape one epidemic, they may not pass through another with the like immunity. The young of both sexes are equally liable to it; and more so than the adult or the aged. It is a disease, indeed, which so generally affects the age of childhood, that it is seen comparatively seldom at after periods. According to the census of Ireland for 1841, the proportion of deaths for the preceding ten years was 100 males to 96·12 females. The age at which it proved most fatal was from birth to the end of the first year,—when the ratio was 100 males to 86·74 females; from the first to the end of the fourth year, 100 to 100·04; from the fourth to the fifteenth, 100 to 100·57; from the fifteenth to the thirtieth, 100 to 138·76; and after thirty, 100 to 161·81. The most advanced ages at which it proved fatal were, in one male, from sixty-five to seventy; and one female from seventy-five to eighty. In advanced life, the frame appears to be but little impressible to it.

From the following table framed by Alex. Watt, LL. D. of Glasgow, it would appear, that the number who die of measles is nearly the same at the same ages in different cities.

	Glasgow.	Edinburgh.	New York.	Philadelphia.
Under 2 years, . . . .	52·76	60·25	47·48	45·76
“ 5 “ . . . .	88·08	92·30	90·09	89·83
“ 20 “ . . . .	99·35	99·67	98·27	99·43
Above 20 “ . . . .	0·64	0·42	1·72	0·56

The table exhibits the percentage proportionate amount of deaths by measles, at different ages, in the various towns, to the whole deaths in those towns respectively.

**Pathological Characters.**—It does not frequently happen, that death takes place in measles during the period of eruption; and, hence, few—if any—opportunities have occurred for witnessing the condition of the internal organs under such circumstances. Certainly, we have no authentic history of the appearances presented. It has been presumed by Dr. Geo. Burrows, that if the condition of the mucous membrane of the trachea and bronchia were examined at this early period, it would probably be found more or less involved in the eruption; but

this is a mere suggestion, and not perhaps a probable one, inasmuch as in none of the eruptive diseases do we find the eruption distinct in the deeper-seated mucous membranes.

When death does take place, it is most commonly owing to the supervention of other diseases,—bronchitis, pleuritis, pneumonitis, encephalitis, endo-enteritis, &c.—the characteristic lesions of which will be seen on dissection. Probably, from the very commencement, and in even the mildest cases, more or less inflammation would be found in the bronchial mucous membrane; indeed, this has been esteemed by Dr. Mackintosh an essential part of the disease.

**Treatment.**—In the milder forms of measles, little management is necessary. During the whole of the eruptive period, there is little danger. The eruptive fever is always more or less severe, and the eruption is occasionally ushered in by convulsions. Still, by paying attention to the state of the digestive tube, confining the patient to bed, restricting him from all excitant food, and allowing only diluent drinks, the disease will generally pass through its progress without the supervention of any unpleasant symptom. Formerly, heating drinks were administered with the view of favouring the eruption; but these are now known to be worse than useless.

The cough, which—as already shown—is one of the necessary phenomena, when the disease is fully developed, is always troublesome. It is never proper, however, to give any of the so-called “expectorants,” with the exception of such as are altogether demulcent and soothing. Barley-sugar or any of the simple “candies” may be allowed: or the almond or oily emulsion; but none of these agents exert much control over the bronchitis, and, accordingly, they should not be taken in such quantity as to endanger disturbance of the stomach and intestines.

Owing to the universal presence of a certain degree of thoracic inflammation, and the danger of more, it has been urged, that bleeding should be employed in the way of prevention; but this appears an unnecessary precaution, provided the symptoms are watched carefully: it has been by no means, indeed, proved, that it answers the intended purpose. If the febrile symptoms run high, and especially if the functional phenomena and physical signs announce the presence of much thoracic inflammation, bloodletting ought to be unhesitatingly practised, and repeated if necessary. Bleeding is borne better in measles than in the other exanthemata; but caution must always be used in pushing it far in young children, and especially in a disease which has a definite course to run, and whose general tendency is to terminate in health. About the period when the eruption ought to begin to decline, especial care is needed in watching the condition of the lungs. The course of the disease is now nearly run, and if, instead of the pneumonitic symptoms yielding at this time, they remain at the same point, or if, *à fortiori*, they become aggravated, the practitioner must treat the disease as thoracic inflammation, without regard to the pre-existing measles. Where the strength and age of the child will admit of it, blood should be taken from the arm; but where such is not the case, it may be obtained from the surface of the chest by cupping or leeching; and, in



the more active cases, where general bleeding has not been practised early, and doubts exist as to its entire propriety, local bloodletting may be preferable. The most strenuous advocates for the essentially inflammatory nature of the disease, and the importance of bloodletting, consider, that when the bronchitic symptoms have been allowed to go on neglected, until the air-passages are gorged with mucus, bleeding is a very questionable remedy, "and"—to use the words of Dr. Mackintosh—"no doubt often does irreparable mischief."

Along with the loss of blood, nauseants and revellents must be employed as recommended under acute bronchitis and pneumonitis; care being taken in this—as in every other—exanthematous affection in regard to the application of blisters, which ought to be permitted to remain on the part for a short time only, and never until full vesication is induced. In young children affected with these diseases, there is a tendency in the blistered part to become diphtheritic or gangrenous.

When the eruption appears imperfectly, or, after having shown itself, recedes or entirely disappears, and great distress is apparent, the observer should endeavour to discover the pathological condition that gives occasion to the phenomena. Generally, it will be found to be owing to too great concentration of action towards the internal parts of the organism. Where this is not great, it may be rectified by the use of the warm bath, which is a useful remedy in all exanthematous affections, and by hot drinks and a sinapism to the epigastric region; but should it be to a greater degree, it may be advisable, first of all, to abstract a small quantity of blood as in ordinary cases of congestive fever, and to follow this up by the employment of gentle excitants—as wine whey. In a case, referred to by Dr. Bateman, in which the fading efflorescence became mixed with petechiæ, and there was apparently no hyperæmia of any particular internal organ, the decoction of cinchona with sulphuric acid, and a little wine were administered, and the child speedily recovered. To facilitate the appearance of the eruption in cases of retardation, or of disappearance after it has once occurred, an emetic,—especially one of a nauseating character,—has been found of service, chiefly through its equalizing influence. The tartrate of antimony and potassa is as effective as any that could be administered.

R.—Antim. tart. et potass. gr. iv.

Aquæ f ʒij.—M.

A dessert-spoonful to be given every 15 or 20 minutes until it operates.

Urtication has been recommended in such cases by some of the European practitioners,—by Professor Trousseau, for example.

In cases of malignant measles, or of those that are essentially congestive from the first, the management must be the one just laid down; and in all the sequelæ and complications, the treatment must be essentially the same as if they occurred after, or along with, the continued or any other form of fever.

During convalescence, great attention must be paid to the bowels, especially if the season of the year predispose to erethism of the mucous membranes. In almost all cases, it may be advisable to pre-

scribe one or two doses of a cathartic at no distant intervals. Care should be taken, also, that the valetudinarian is well clad, and that he has readily digestible and nourishing diet, with change of air, where practicable, in order to avoid the development of those strumous and tuberculous diseases, which are so apt to follow in the train of measles.

The only safe plan of prophylaxis is to separate the healthy from the sick, until desquamation has ceased. The various specifics that have been brought forward,—sulphur; a mixture of antimonial wine and oxymel of squills; chlorinated fumigations; belladonna, &c., have not proved worthy of confidence. Inoculation seems to merit more attention.

#### *False Measles.*

SYNON. Rubeolæ (of some), Roseolæ (of some), Rosellina, Exanthesis roseola, Scarlatina miliaris, Rose rash; Fr. Roséole, Eruption anormale, Rosace, Fièvre rouge, Efflorescence erysipelateuse, Fausse Rougeole; Ger. Rötheln, Ritteln, Falschen Masern, Feuermasern, rothe Hund.

This is the affection, which—as before remarked—is termed, by the Germans, *Rötheln*. It is an acute exanthema, midway between measles and scarlet fever, but which belongs to neither one nor the other; for it affords no protection against either, and may recur more than once in the same individual, and after he has passed through both. Generally, it resembles scarlet fever more than measles. It is occasionally observed in this country, both sporadically and epidemically, and receives, in the ignorance of a more appropriate appellation, the name of *French measles*. It is doubtless a variety of the *Roseola* of Willan.

**Diagnosis.**—The usual characters of the disease according to a recent writer, Dr. R. Paterson, are as follows:—For two or three days, there is slight fever; after which, an eruption appears on different parts of the body, in spots larger than measles, generally half an inch in diameter, and in the midst of which small vesicles sometimes form. In a few days—from six to ten—the red colour of these patches disappears, and desquamation ensues. The separation of the cuticle is greater than in measles, but in smaller portions than in scarlatina. The patients commonly complain of pain in the neck, and in the salivary glands; yet neither the eyes nor the nose may suffer as in measles; in other cases, however, watery discharges take place from the eyes and nose, with sneezing and sore throat. The eruption of roseola, as ordinarily seen among us, is in irregular rounded patches, which are generally larger and less numerous than those of measles. At times, these are arranged in rings, with central areas, which preserve the colour of the skin—the *Roseola annulata* of Willan. The roseola that prevails in warm weather is that which is attended with most indisposition and fever. The colour of the eruption is generally darker, and the sense of itching greater. This is the *Roseola aestiva*, of Willan.

M. Rayer, and MM. Rilliet and Barthez, admit the great difficulty that exists, at times, in distinguishing roseola from measles. The distinction cannot be positively made from the appearance of the erup-

tion, but from the absence of the constitutional symptoms of measles: should roseola exist, however, with the general symptoms of measles, the difficulty in the differential diagnosis would be extreme.

The disease is not generally of much consequence, although the febrile symptoms are, at times, severe.

**Treatment.**—It is but necessary that this should be simply antiphlogistic, and of the same preventive kind as is necessary in cases of measles.

## 2. SCARLET FEVER.

SYNON. *Scarlatina*, *Morbus scarlatinus*, *Morbili confluentes*, *M. ignei*, *Febris scarlatinosa*, *Gutturis morbus epidemicus*, *Rosalia* (of some), *Rubeola* (of some), *Euanthesis rosalia*, *Rosalia* (of some), *Rossalia*, *Purpura* (of some), *Typhus scarlatinus*, *Febris rubra*; *Fr.* *Scarlatine*, *Fièvre rouge*, *F. pourprée*; *Ger.* *Scharlachfieber*.

The term "*Scarlatina*"—which is modern, and said to have been introduced into medical nomenclature by Sydenham—is employed to designate a disease, the general characters of which consist in fever, usually preceding, by a day or two, the appearances of a scarlet efflorescence of the skin, and of the mucous membrane of the mouth and fauces, with inflammation of the throat in most cases; the eruption terminating by desquamation towards the end of the first week.

It is said to have been first distinguished from measles by Ingrassias in 1556; but a physician of Poitiers, named Jean Coyttar, is considered in France to have published in 1578, the first monograph on the subject.

**Diagnosis.**—Many divisions have been made in order to embrace the prominent characters of the epidemic, or of the particular case as it presents itself in any individual. The most common have been the following:—1, *Simple scarlet fever—Scarlatina simplex, Scarlatina sine anginâ* of Dr. Robert Williams—in which the fever is seldom active; the cutaneous efflorescence is complete, but there is no angina or inflammation of the throat. 2, *Scarlatina anginosa, S. mitior* of Dr. Robert Williams, in which the febrile excitement is greater, the eruption complete, with considerable amygdalitis or isthmitis. 3, *Scarlatina maligna, S. gravior* of Dr. Robert Williams, in which the fever is of an adynamic character, with considerable depression of the vital forces; and, along with the other symptoms of *scarlatina* in general, a diphtheritic or sloughing inflammation of the throat, with, not uncommonly, enlargement of the salivary glands, and an acrimonious discharge from the nose and ears. These are the main varieties depicted by writers; but, as in the case of measles, every variety is scarlet fever modified by particular circumstances, as by the constitution of the patient, the nature of the epidemic, and the intensity of the affection of internal organs. Unquestionably, there are, as in measles, two great varieties, one of which may be named the inflammatory, and the other the congestive; and subdivisions—it has been remarked by Dr. Mackintosh—might be made of different combinations of these two: there is always, too, much difference between the phenomena presented by the form which is uncomplicated with sore throat and by those forms that are.

The eruptive fever of simple scarlet fever varies both in intensity

and duration; sometimes, it is extremely slight; at others, violent. The patient commonly complains of debility and general indisposition; with nausea or vomiting; slight chills followed by heat of skin, and thirst; and, at times, headache, epistaxis, and more or less stupor. On the second day of the disease, according to the testimony of most observers,—at times, not until the third or fourth,—the efflorescence begins to appear; the face becomes swollen, and it, as well as the neck and chest, begins to be covered with small red points or spots, which are not prominent, and are, at first, of a deep, but subsequently of a vivid red, separated by portions of the cutaneous surface of the natural colour. These spots gradually coalesce, so that, on the face, neck, and upper extremities, the eruption is uniform and continuous; but, over the trunk, it is diffused in larger irregular patches. On the loins, nates, and the bends of the joints, it is generally of a more vivid hue than on other parts of the body. The eruption is often attended with a roughness of surface, when the hand is passed over it, owing to the enlargement of the papillæ. At the outer and posterior part of the arms and thighs, these elevations are, at times, so considerable as to constitute the *Cutis anserina* or *Chair de Poule*. The skin is burning hot, tense, dry, and unusually sensible to the touch. The feet and hands are intensely red, swollen, stiff, and painful. About the fourth day, the eruption is commonly at its acme, presenting the appearance of the shell of a boiled lobster, or as if the skin were dyed with the juice of the raspberry. On the fifth or sixth day, it begins to fade; the redness disappears in the order in which it appeared; the tumefaction of the face subsides; and, on the seventh day, it has become indistinct. Itching now supervenes, and the desquamation commences,—large flakes separating from the hands, feet, and other parts of the body. Whilst the eruption is on the cutaneous surface, its effects are perceptible on the mucous membranes of the mouth, fauces, and nostrils, all of which are of a vivid red colour. The papillæ of the tongue are preternaturally elongated, and their red points project through the white coating; but this is not peculiar, being observed in certain cases of gastro-enteric and other affections. When the tongue is devoid of this coat, it is extremely red, the elongated papillæ giving rise to a peculiar appearance. This condition of the mouth and fauces disappears with the eruption in simple scarlet fever; the fever, too, abates at the same time, so that, at the end of about a week, the patient seems to be free from the disease, but greatly debilitated in many cases.

Such is the course of the mildest form of scarlet fever: it often happens, however, that the disease is much more violent. In the variety, for example, commonly termed *Scarlatina anginosa*, the prodromic or precursory symptoms are more severe; and often,—from the commencement,—the muscles of the neck and lower jaw are suddenly affected with a kind of stiffness. On the second day, the fauces are inflamed; the voice is hoarse, and deglutition difficult and painful. The tonsils are swollen, and the mucous membrane of the mouth and fauces of a vivid red colour. The whole throat becomes covered with a thick, viscid secretion, or flakes of a pultaceous matter, of a gray, yellowish, or white caseous character, analogous to what is seen in

certain inflammations of those parts described elsewhere. These have been regarded as sloughs from ulcers, but they appear to be true exudations from the inflamed mucous membrane. When blood is exhaled, these exudations acquire a dark colour, which gives still more the idea of sloughing ulcers, as the breath is, at the same time, offensive. The pultaceous matter can be readily detached from the membrane, but it never separates in shreds, as in the diphtheritic cynanche. It differs, too, essentially from cynanche maligna, in there being no ulceration, no loss of substance,—the inflamed points, when cleansed by drinks or gargles, being distinctly perceptible. The presence of the viscid secretion gives rise to constant, distressing, and, too often, to ineffectual efforts for its expulsion.

On the second, third and fourth days, the disease is generally at its extreme of violence; the pulse is frequent, but its strength is by no means equal; the respiration is oppressed; the thirst is urgent, and, towards evening, there is usually an exacerbation of the febrile movement, and not unfrequently delirium. The heat under the tongue is now very great. It is, perhaps, the hottest of all fevers. The author has often marked the mercury at  $106^{\circ}$  Fahr. and it is affirmed, by Dr. Geo. Burrows, to have been noted as high as  $112^{\circ}$ ; but this is questionable. The eruption does not commonly appear so early in this as in the simple variety. Frequently, it is not seen until the third day, and does not so constantly extend over every part of the body. It consists of patches of a scarlet or raspberry hue, scattered over the back, flanks, neck, chest and limbs, and almost constantly on the wrists: these patches sometimes disappear on the first day, to recur irregularly at an after period. The efflorescence is most commonly accompanied by a marked tumefaction of the subcutaneous cellular tissue, especially on the face, and on the fingers, the flexion and extension of which are impaired.

The whole duration of the eruptive stage is longer than in simple scarlet fever; and the period of desquamation takes place with much less regularity. When the eruption has disappeared rapidly, there may be little or none; on the other hand, when it has been very intense, the desquamation may continue for two or three weeks. The febrile symptoms and the affection of the throat begin to abate with the progressive disappearance of the eruption; but some degree of febrile excitement and of sore throat may continue for a week or more after the eruption has entirely gone.

Scarlatina anginosa is very apt to be complicated with affections of some of the serous membranes—encephalic, thoracic or abdominal—and these complications are the most common cause of the fatal termination of this variety. The affection of the mucous membrane of the fauces is often, too, extended to that lining, the nose, and the Eustachian tube, so as to give rise to an acrid discharge from the Schneiderian membrane, and to deafness. Many of these complications require great care in diagnosis, for they sometimes prove rapidly fatal, and are always dangerous. Unpleasant sequelæ are also to be expected more frequently from this variety than from simple scarlet fever.

At times,—and, unfortunately, not unfrequently,—the disease occurs with phenomena still more serious than those that belong to scarlatina anginosa. The symptoms are essentially those described under GANGRENOUS PHARYNGITIS, excepting, that in the latter there may be no eruption. At the very commencement, they are like those of the anginose variety; but soon the malignant character is indicated by fever distinctly of the typhous form, in which the encephalic functions are greatly disordered, and the heat of the skin and other signs of typhus well marked. When the fauces can be inspected, they are found to present a dusky red appearance, without much tumefaction. Exudations of a dark colour are thrown out in some cases, and, in others, a true gangrenous inflammation occurs, leading to the formation of extensive sloughs. At the same time an acrid discharge takes place from the nose (*Rhinocœce*, *Coryza scarlatinosa*; Ger. *Nasen-fäule*, *Scharlachschnupfen*); the breath is fetid; and the viscid secretion in the pharynx gives rise to a rattling respiration. In severe cases, the inflammation of the pharynx occasions so much difficulty of deglutition, that the attempt to swallow fluids causes their rejection by the nose. Diphtheritic exudations are observable on the inside of the lips and cheeks; and the cervical and salivary glands are subject to inflammatory tumefaction, which ends, at times, in the formation of abscesses. The eruption is extremely irregular in this form, both in its appearance and duration. Frequently, it appears late, and remains out only a few hours; or it recedes and recurs several times in the course of the disease. Usually, it is paler than in the other varieties: but, in places, it assumes a deeper hue. The urine, according to M. Simon, at the commencement, when there is much fever, is of a deep dark-red colour, and possesses all the properties of the urine of inflammation. It almost always has an acid reaction, and only shows a tendency to become rapidly ammoniacal, when the disease is associated with a nervous or septic condition of the system. Any sediments that may be formed consist, for the most part, of urate of ammonia and uric acid, mixed with a greater or less amount of mucus: blood corpuscles are occasionally noticed in it. When the urine is ammoniacal, viscid whitish sediments of the earthy phosphates are deposited; and if there be much gastric disturbance, the urine becomes jumentous. Albumen is commonly, but not always, found in the urine during the period of desquamation. M. Remak has observed, that a white flocculent sediment often continues to be deposited for a considerable time after the process of external desquamation has ceased. This deposit consists, for the most part, of epithelial scales from the surface of the bladder; and he affirms, that as long as it continues to occur, the patient must be carefully watched, even although in all other respects his health is completely re-established.

The typhous condition is exhibited, along with other symptoms, by the appearance of petechiæ, and a strong hemorrhagic tendency from the mucous membranes; and occasionally and inexplicably, the large joints become extremely painful and swollen, with evidences of fluctuation. In many cases, the malignant form terminates fatally on the third or fourth day; and, at times, without there being any reason to

apprehend so sudden a termination. There is no safety, indeed, for the patient, until he has completely passed through the disease; nor can all apprehensions cease even, then, for the sequelæ are often as important as the original affection. In those cases that terminate so suddenly and without apparent cause, no appreciable lesion may be found on dissection.

Lastly, as measles occasionally occurs without eruption, so may the scarlet fever poison—if it may be so termed—exhibit itself without the characteristic cutaneous affection. This constitutes the *Scarlatina sine exanthemate* of some writers, *scarlatina sine eruptione* of Dr. Robt. Williams. The cause of the disease seems to expend itself on the mucous lining of the mouth and fauces, and, during epidemic scarlatina, may attack certain members of a family in this manner, whilst the others pass regularly through the disease; indeed, all the varieties, from the simplest to the most malignant, are occasionally met with in different individuals of the same family. At times, this form of the disease assumes the characters of cyanche maligna, and may prove fatal. It has been considered, too, to be, as capable of communicating scarlatina as the other varieties.

Scarlatina can scarcely be confounded with any disease except measles: the mode of diagnosis has already been given, when treating of the latter affection.

Allusion has been made to the tendency in the serous membranes to become morbidly implicated in scarlatina, and to the generally serious nature of those affections. In certain epidemics, and in sporadic cases likewise, attacks of inflammation of the mucous membranes—as of the bronchial tubes, stomach and intestines—occur, the latter not unfrequently putting on the form of pellicular or diphtheritic inflammation. It has, also, been remarked, that effusions of fatal tendency occasionally take place into the larger joints. Gangrene of the extremities likewise occurs, at times. In an account of scarlatina, that prevailed in the London Foundling Hospital, Dr. Watson gives one case that died of mortification of the rectum; and six others that died sphacelated in various parts of the body. In the girls, some had the pudendal region mortified; two had ulcers of the mouth and cheek, which sphacelated externally; whilst one had the gums and jaw-bone so corroded, that most of the teeth fell out before she died. The lips and mouth of many that recovered were ulcerated, and continued so for a long time. One of the most serious sequelæ is anasarca, appearing in the face, eyelids and lower extremities; and, not unfrequently, becoming general. Dropsy may, likewise, exist in the different serous cavities. In some epidemics, this sequela has been found more serious than the primary disease, whilst, by others, it has been regarded as an affection of no great importance. The urine, in this affection, often contains albumen, and there is such a striking similarity between the phenomena, during life, in it and in the *morbus Brightii*, that it has been presumed by M. Rayer, that dissection might establish the existence of the lesion, which constitutes the latter disease. It has, indeed, been affirmed, by a late writer, that the kidneys exhibit traces of incipient disorganization; and, still more recently, Dr. R. Willis has remarked,

that in all the cases which he had seen within the four years preceding, which might amount to between forty and fifty, "the kidney has always been affected, if blood and pus corpuscles in the urine, a scanty secretion, and albuminous state of this fluid, be allowed as evidences of implication of the secreting organ." When; however, we reflect upon the number of perfect cures of anasarca succeeding scarlatina, it is more philosophical to infer, that the albuminuria consists of some functional derangement, rather than of organic disease of the kidney, especially as we know that it is often induced in this manner.

Of late, attention has been directed, by many observers, to pericarditis, as a complication of scarlatina, and it is probable that the affections of the joints, resembling rheumatism, that occur in scarlatina would be frequently found to be associated with pericarditis, if attention were closely directed to the heart.

Simple scarlatina, occurring in a healthy individual, is a disease devoid of danger; yet danger may arise from the supervention of hyperæmia, and this has always to be borne in mind. It is often indicated by the sudden recession of the eruption, as well as by its tardy or irregular appearance. A benign case occasionally, too, assumes rapidly all the characters of the congestive or malignant variety.

The extent of the pharyngeal inflammation marks, in a measure, the severity of the disease in the anginose and malignant varieties: where this is slight, the danger is less; but if the tumefaction and difficulty of deglutition be very great, the danger is in proportion. The same may be said of the gastro-enteritic, pleuritic, and meningitic affections, all of which are very serious complications. It need scarcely be said, that in all cases of scarlatina maligna, the prognosis should be of the most guarded kind. In certain epidemics, too, the disease is more fatal than in others. The glands of the neck sometimes inflame and suppurate, so as to occasion great destruction of parts; and, at times, the tumours press upon the larynx, so that the patient dies under all the symptoms of suffocation.

There is, moreover, a form of scarlatina, which is termed the *hemorrhagic*, and which is almost always fatal. It is indicated by the ordinary signs of purpura; dark spots appearing here and there, followed by exudation of blood from the mucous membranes of the mouth and nose especially, which is, occasionally, so profuse as to cause death. In these cases, if a puncture be made, it becomes the seat of hemorrhage. In one case of this kind, referred to by Dr. Morton, of Philadelphia, an abscess in the neck suddenly filled with blood, and this, making its way through a leech-bite, flowed out as if from a divided artery, and destroyed the patient in a few hours.

Scarlatina has been observed to affect puerperal more readily than pregnant women. At the Maternité, of Paris, according to M. Andral, it was remarked that the disease scarcely ever attacked the latter; but they readily contracted it after delivery: under such circumstances it is of more serious import. It is certainly one of the most alarming diseases that can affect a family; and it is not uncommon for two or more to be carried off by it. It is difficult—impossible, indeed—to assign any adequate cause for the fact, but it would appear,



that some families are more fatally affected by it than others; and the statistics of this city (Philadelphia), as well as of others, show, that it proves more fatal to females than to males. The statement of deaths in Philadelphia, for the year 1839, gives 225 from scarlet fever, 109 of which occurred in males, and 116 in females; of the males 2, and of the females 4, were adults; of the whole number, 10 were under one year of age; 40 from one to two years; 125 from two to five; 39 from five to ten; 5 from ten to fifteen; 2 from twenty to thirty; 1 from thirty to forty; 2 from forty to fifty; and 1 from fifty to sixty. According to Dr. Condie, during the ten years preceding 1845, 2154 deaths occurred from scarlatina in Philadelphia, in individuals under 15 years of age:—122 in infants under one year; 400 in those between one and two years; 1083 in those between two and five; 493 in children between five and ten; 56 in those between ten and fifteen, and 66 in persons beyond that age. It would not seem, however, that it is everywhere more fatal to females than to males. According to the census of Ireland for the ten years preceding 1841, the number of deaths from scarlet fever was 7886—the sexes being in the ratio of 100 males to 95·97 females. Of the deaths during the first year, the ratio was 850 males to 721 females; from the first to the fifteenth year, 2958 males to 2917 females; from the sixteenth to the twentieth, 89 males to 111 females; and from twenty-one upwards, 125 males and 111 females. *Cæteris paribus*, it is a more serious disease in the adult and aged than in children.

In England and Wales, the number of deaths amongst children from scarlatina was, in 1838, 5802: in 1839, 10,325,—less than the mortality from measles. (W. Farr, in *Third Report of Registrar-General*, 1841.) If, however, we reckon the year 1840, the preponderance is on the side of scarlatina,—the deaths during that year being 19,816; whilst those from measles were 9326.

In all the Atlantic cities, so far as an examination has been made, scarlatina appears to be a more fatal malady. In an "Inaugural Essay on the Comparative Mortality of Measles and Scarlet Fever," presented to the Faculty of Jefferson Medical College in Feb. 1844, by Dr. George King Smith, the number of deaths from measles in Philadelphia, from 1807 to 1841 inclusive, is stated to have been 1376; from scarlatina, during the same period, 2226. In New York, from 1819 to 1834 inclusive, the deaths from measles were 1337; from scarlatina, 1500. In Boston, from 1811 to 1840 inclusive, from measles, 700; from scarlatina, 970.

The following table, drawn up by Alex. Watt, LL. D. of Glasgow, exhibits the per-centage proportionate amount of deaths by scarlet fever at different ages, in various towns, to the whole deaths by that disease in each town respectively.

	Glasgow.	New York.	Philadelphia.
Under 2 years, . . . . .	35·40	30·12	40·69
“ 5 “ . . . . .	70 15	76·75	75·49
“ 20 “ . . . . .	97·95	97·39	97·77
Above 20 years, . . . . .	2·04	2·60	2·22

Similar examples to the above are given for other towns of England

and Scotland in the volume of the "British Association Transactions" for 1842, from which it appears, that the same law is applicable to all the localities examined.

**Causes.**—Similar remarks to those made under the head of measles are applicable here. It is generally considered to be contagious,—almost universally so, indeed; yet the evidence—in the author's opinion—is not as strong as in the case of measles; and many persons deny altogether, that it is communicable. The author has repeatedly known it attack one member of a family, where several have appeared to be equally liable to it, and who have escaped; yet they have at a subsequent period, and without any knowledge of exposure, been attacked with the disease. The safe side is, unquestionably, to believe it to be contagious, and to suffer no unnecessary communion between the sick and the sound, especially if the epidemic be malignant. The author has never known an authentic instance in which the contagious matter was conveyed by the clothes of the practitioners; yet there are instances on record, some of which have been published by his friend and colleague, Professor J. K. Mitchell. In these, disease would seem to have been conveyed by articles that had imbibed the morbid effluvia.

That scarlet fever occurs more frequently in the period of youth than in the adult age is shown by all experience, and is proved by the statement of deaths in Philadelphia just cited. From that statement, the fatality would appear to be greatly diminished after ten years of age; but it must be borne in mind that the number attacked after that age is smaller. There is just reason, indeed, to believe, that of those attacked after the age of puberty, more die than at an earlier age.

It is affirmed by writers, that epidemics of scarlet fever are observed towards the equinoxes especially, and during the winter, when atmospheric changes prevail, as well as in moist, cold, and misty periods, and after copious rains followed by great heat; but the author has not been able to trace any invariable or even frequent sequence in these respects. That it prevails epidemically is unquestioned; but as to the nature of the epidemic influence we are wholly in the dark; nor can we account, with the least plausibility; for certain epidemics being benign whilst others are malignant.

Even if we admit, that the disease is induced by contagion, it is probable that it may arise from other causes. It can scarcely be maintained, that its universal mode of propagation is by some specific miasm disengaged from an individual labouring under the disease, and that no combination of influences can now arise capable of generating it *de novo*.

Like measles, scarlatina rarely affects the same person twice. Dr. Billing, indeed, states, that he has known it occur three times in the same individual,—frequently twice;—in one instance, twice within ten months, in its exquisitely marked form, as to inflamed tonsils, appearance of tongue, eruption, and desquamation of the cuticle. The author attended, with his friend Professor Mitchell, a lady, who, six years previously, was affected with it for the first time in childhood,—the child being born with the eruption;—three years afterwards her child

had it for the second time and died; and she also suffered from a second attack severely. The third attack occurred when attending on a young gentleman who died of the disease.

It is by no means uncommon, however, for those who have had the disease, to suffer from sorethroat, (*scarlatina faucium*) when they are in attendance upon one labouring under scarlatina.

**Pathological Characters.**—On the dissection of those who have died of scarlatina, there are frequently no morbid appearances sufficient to account for the fatal event. Often, where the inflammation and ulceration of the throat have appeared to be most severe and distressing during life, dissection has shown but slight traces: commonly, the appearances of dark-coloured exudations covering a dark red or livid membrane have been found,—much more frequently, indeed, than actual ulcerations. These exudations, according to Messrs. Rayer and Tweedie, are seen extending down the lateral parts of the pharynx and œsophagus, but not into the larynx and trachea.

Dr. Mackintosh has affirmed, that the most constant morbid appearances, met with by him, have been in the air-passages: these presented inflammation in its various stages,—vascularity of the mucous membrane, thickening and occasional ulceration. In two cases, he saw the epiglottis nearly destroyed by ulceration; and also “effusion of thick, tenacious matter, filling up the air-passages to the bifurcation, and often lining the trachea.”

From the symptoms before described, it might naturally be expected, that inflammation and its results should be occasionally apparent in the lungs, pleura, peritoneum, arachnoid and the serous membranes in general; and, that there should be, not unfrequently, also, evidences of gastro-enteritis and its results. The appearances, of course, vary materially according to the precise complication; and, in certain epidemics, particular complications are found to prevail more than in others. Thus, according to Hamilton, in an epidemic in Edinburgh, during the autumn of 1832, almost every severe case had more or less of chest affection, and there was only one fatal case, in which it was not evident, from the appearances after death, that violent inflammation had extended to the larynx, trachea and lungs. Where the secretion of urine is albuminous, the kidneys may, or may not, exhibit evidences of the morbid condition witnessed in “Bright’s disease.”

**Treatment.**—The greatest discrepancy has prevailed in regard to the management of scarlet fever, and this has been mainly owing to the difference in the character of the particular epidemic; for it will be found, that whilst a certain course is the most successful that can be pursued in one epidemic, it may be wholly or mainly ineffectual in another. We can hence understand the conflicting views of therapeutists;—some advising the free use of the lancet, whilst others have recourse to excitants even from the commencement. This, however, only accounts for a part of the discrepancy, for even in the same epidemic we meet with the most opposite plans of management advised by different practitioners.

In the most simple form of scarlet fever, all admit, that but little

treatment is necessary. The patient should be confined to bed, attention be paid to the state of the bowels, and the antiphlogistic regimen be rigidly enforced. When the heat of the surface is very great, the face, legs and arms may be sponged with cold water, or with cold vinegar and water,—the rule being, to employ cold ablution when the skin is steadily hot and dry; but if any chilliness be experienced, the water should be tepid or warm instead of cold. In like manner, as long as the febrile heat is great, ice may be allowed freely; and a more agreeable febrifuge cannot be prescribed than the ordinary soda or mineral water of the shops, which may be put up in one ounce vials, and one of these be allowed every three or four hours, or when the thirst is urgent.

In strong plethoric subjects, and where the character of the epidemic does not appear to contraindicate it, bloodletting may be practised with the view of preventing hyperæmia in internal organs. It is important, too, to watch attentively the simplest case, particularly at the period of the subsidence of the eruption, when there would seem to be greater danger of internal hyperæmia, or of the supervention of anasarca. In the variety described as scarlatina anginosa, local inflammation exists, and fever generally in a ratio therewith. It is in this form, that we witness great discrepancy as to whether the abstraction of blood should be freely or sparingly employed, or be altogether dispensed with: commonly, perhaps, the state of the vital forces will not bear general bleeding, and, therefore, it should be used with caution. Local bloodletting, by means of cups behind the neck, or of leeches to the throat, may, however, be practised with great advantage, and it has been advised to scarify the tonsils themselves, which is, doubtless, the best form of local bloodletting in the case of the adult, but can rarely be practised in children. After leeches have been applied, an emollient cataplasm may be put around the neck. It is in cases of visceral inflammation, that the necessity most frequently arises for the vigorous use of bleeding and other antiphlogistics; but it must be borne in mind, that the inflammation constitutes a complication to a very peculiar disease, and one that requires the exercise of the greatest discrimination to decide how far antiphlogistic measures should be carried. In the disturbed state of the encephalic functions, which so often attends this anomalous disease, we frequently recognise—it has appeared to the author—a condition very different from that which is produced by active inflammation or hyperæmia of the encephalon. The encephalon appears rather to be exhausted by the unwonted activity of the portion of the nervous system concerned in the excited function of calorification; and, accordingly, in many such cases, the use of diffusible excitants has been found serviceable,—the delirium or the coma gradually disappearing as the system begins to feel their influence. This practice has been adopted in scarlet fever accompanied by such signs of encephalic disorder, and with great success, by Dr. Baer, of Baltimore, and it has been followed by similar results in some cases that have fallen under the author's care. (See *General Therapeutics and Mat. Med.* 3d edit., i. Philad. 1846.)

By many, emetics have been advised, at the commencement of the

anginose variety especially, to cut short the disease; but they usually fail in this, as the disease must be considered to be self-limited; and they are not much employed. Great diversity of sentiment has, likewise, prevailed in regard to the employment of cathartics; there can be no question, however, that the bowels should be kept open by those of a gentle kind, as by rhubarb and magnesia,<sup>a</sup> epsom salts and magnesia,<sup>b</sup> or castor oil, (ʒʒij.); but active purging is very rarely—perhaps never—advisable.

<sup>a</sup> R.—Rhei pulv. gr. x.  
Magnesiæ gr. xv.  
Ol. carui vel anisi gtt. iv.—M.

<sup>b</sup> R.—Magnes. sulphat. ʒss.  
———— carbonat. ʒiiss.  
Aquæ menthæ ʒʒij.—M.  
One half for a dose, to be repeated in two or three hours if necessary.

The internal use of the vinum colchici has been found to exert a most salutary influence in inflammatory scarlatina, according to the experience of one practitioner, M. Tait; the dose to children from four to six years of age being three or four drops every three or four hours. In most of the cases, bloodletting—general and local—was had recourse to; in others, local bloodletting only; and it was remarked, that the effects of colchicum were always most apparent after the abstraction of blood. Mr. Tait remarks, that in one epidemic, he only lost one patient in 126; whilst others lost one in five or six,—an enormous difference; so great, indeed, as to lead to some suspicion of inaccuracy in the statistical results.

The refrigerant plan of treatment, recommended under scarlatina simplex, must be pursued in this variety, with the precautions there laid down. At one time, it was the custom, at the commencement of scarlatina, as of typhus, to endeavour to cut short the disease by the affusion of cold water on the naked surface; and the late Professor Gregory, of Edinburgh, who was never slow to adopt any improvement, was the first in Scotland to practise it on his own children. The results were satisfactory to him,—the disease being certainly mitigated; but the shock is at times so great as to lead to the belief, that injurious and even fatal consequences may have followed its employment, and cold ablution has, therefore, been substituted. Taken singly, this is perhaps the most effectual remedy that can be employed in the inflammatory varieties of scarlatina, and induces the same soothing influence as in other forms of fever. Chlorinated soda, chlorinated lime, or the aqua chlorini, is sometimes added to the water. The same agents have been used in gargles, but the most common, perhaps, is the muriatic acid gargle, which is grateful, and calculated to remove the viscid exudation.

R.—Acid. muriat. gtt. xxx.  
Mellis ʒij.  
Aquæ ʒʒvj.—M.

In very young children, it may be applied by means of a mop—formed of a piece of sponge or linen rag tied to the end of a stick; but it is doubtful whether the fatigue and annoyance induced by it do not more than compensate for the benefits. Soda water, given as before advised, or the simple effervescing draught, made either of lemon-juice and the carbonate of soda, or of tartaric acid (gr. x.) and carbonate

of soda (gr. xv.), cleanses the fauces, and is, at the same time refreshing, especially if the water be at a low temperature. There is an objection, however, to the citrate of soda or the tartrate of soda formed, that if taken very frequently it may act on the bowels—an objection, which does not apply to the simple soda water of the shops. The aqua chlorini has likewise been advised internally, but it is not much employed. It would seem to be more appropriate in cases of scarlatina maligna. In such cases—as well as in the adynamic forms of continued fever—Dr. Watson is in the habit of prescribing a solution of chlorate of potassa in water, in the proportion of one drachm of the chlorate to a pint of the liquid, as a drink. Under the use of a pint or a pint and a half of the solution daily, he has noticed, in many instances, a speedy improvement of the tongue, which, from being furred, or brown, or dry, has become cleaner and moist.

It has been thought by a practitioner of some eminence, but not devoid of exclusiveness in his views, Dr. Mackintosh—that the best gargle is a little warm water, and he particularly cautions young practitioners against attempting to syringe the throat of a young child.

After the subsidence of the fever and the disappearance of the eruption, still more care is needed than in cases of simple scarlet fever. The debility is so great that it has been proposed to put the patient on a nutritious diet, and to allow tonics. These must, however, be administered with due care, as the sequelæ of this variety of scarlatina are rather those of inflammation than of debility. Still, tonics that do not manifestly excite, as any of the ordinary vegetable bitters—columbo, gentian, or prunus Virginiana, or the cold infusion of cinchona—may occasionally be prescribed with advantage.

It remains to treat of the management of the most formidable variety of all—scarlatina maligna. The accompanying fever is here of the adynamic cast, and often the symptoms are those of congestive typhus. In the latter case, it may be advisable to draw blood sparingly, and at the same time to administer gentle diffusible stimuli, as has been advised in the congestive forms of fever. If the fever be considerable at the onset, and there be much inflammation of the throat, leeches may be applied; but even the local abstraction of blood has subsequently to be employed with caution. The inflammatory symptoms generally, indeed, pass away in a short time, and those of depression follow. It is not often that the heat of skin is so great as to allow of cold sponging; and if cold and moisture be had recourse to at all, the water should be tepid or warm. If chilliness be excited, the irregularity of function is apt to lay the foundation for internal hyperæmia, or to increase it, should it already exist. The general plan of treatment, recommended in the anginose variety, is advisable here: emetics have been recommended by some, but it is not easy to see what important benefit can result from their use, except in regard to the exudations from the throat, which they may clear away. Their operation, however, fatigues, and no essential amelioration of the symptoms is produced by them.

In regard to the treatment of the affection of the throat, the same

remarks are applicable as to scarlatina anginosa. Gargles are certainly not of much service, and they harass greatly. The chlorides have been used extensively, and one of the gargles most employed in this country is made of the capsicum or Cayenne pepper.

R.—Capsic. pulv. ℥j.  
Sodii chlorid. ℞j.  
Aceti fʒss.  
Aq. ferventis fʒvj.—M.

The infusion of black-oak bark and of green tea have been equally used for their astringent properties.

When the glands of the neck, or the tonsils, are much tumefied, and there is difficulty of breathing, in consequence of the exudations from the diseased membrane, or the existence of actual sloughs, it has been proposed to apply blisters to the neck; but if they be employed at all, they should only be kept on until they excite rubefaction, owing to the tendency, before mentioned, in the surface of the derma to become diphtheritic or gangrenous. As good an application as any, in these cases, is a simple emollient cataplasm, or one to which a portion of flour of mustard has been added. Should suppuration take place, the matter must be evacuated early, to prevent extensive sloughing of the integument of the neck.

In the fatal forms of scarlatina anginosa, in which the parts beneath the jaw swell, at times rapidly, and attain an enormous size, Dr. Corrigan warns the surgeon against opening the tumours, or making incisions through the integuments, which he might otherwise be tempted to do, under the impression, that he had met with a case of diffused cellular suppuration. He has never seen the slightest benefit from such a proceeding, and when it has been practised, the cellular tissue, instead of containing pus, has been found infiltrated with a dirty-looking serous fluid. The only treatment, he thinks, which can be relied on is of the preventive kind, and consists in the application of relays of a small number of leeches; but this must be instituted before the inflammation is fairly established, or, according to Dr. Corrigan, the patient will be inevitably lost.

After the disease has passed through the eruptive state, or should the symptoms indicate their use at an earlier period, it may be necessary to support the system by the administration of any of the simple bitter vegetable tonics, or of the cold infusion of cinchona, or the sulphate of quinia, which may be given freely. In many cases, too, as before observed, positive advantage is to be derived from the free employment of stimulants, as of wine whey, or of wine and water, given at frequent intervals. The farinaceous preparations, as sago, arrow-root, or beef tea, may be directed, taking care not to overload the stomach; and if the skin be cool, and the pulse feeble, the existence of delirium or coma, instead of counterindicating, may still more suggest, the use of excitants. As in other adynamic cases, carbonate of ammonia is often employed; but neither in this, nor in other similar conditions has the author observed marked benefit from it. It has appeared to him much inferior to wine whey.

The dropsical effusions, which succeed scarlet fever, almost always

require the antiphlogistic management. They are generally accompanied by marked evidences of vascular excitement, and have been found to yield promptly under the use of the lancet. In other cases, however—and most commonly perhaps—they do not require the lancet, and generally yield to brisk cathartics, given about twice a week, and to diuretics,—the general treatment, indeed, which is demanded in hydroptic effusions when of the active kind; it being borne in mind, that the kidneys have often been found diseased in these cases; and hence, that all over-stimulation of those organs by too powerful diuretics cannot fail to be prejudicial. The idea of some, that these secondary dropsies are always dependent upon, or connected with debility, and, therefore, that they ought to be treated by tonics, ought certainly to be deprecated; but equal caution should be entertained in regard to the too vigorous use of depleting agents. A case, given by Dr. Mackintosh, ought certainly not to be taken as the rule of action in all cases. “Dr. Lewins was called to see a little patient of mine, who, after scarlatina, had dropsy with coagulable urine. Convulsions suddenly appeared when he was much debilitated. Dr. Lewins opened a vein, and allowed the blood to flow, till the boy (whose age was ten years) was relieved; the blood weighed two pounds. No debility followed, and the boy, from that time, made a rapid recovery, and has ever since been healthy.”

Dr. Willshire, who maintains, that the dropsy is rather of an asthenic character, speaks highly of iodide of potassium, given in a bitter infusion, as a remedy in these cases.

After the disappearance of the eruption, the various affections, already referred to—viz. inflammation and suppuration of the glands, inflammation of the middle ear with fetid discharge from the meatus auditorius externus, and closure of the Eustachian tube, have to be treated according to the rules laid down elsewhere.

In the case of a disease so alarmingly fatal, it is not astonishing, that efforts have been made to prevent its extension, or to diminish its fatality. Many years ago, it was proposed by a respectable practitioner, Dr. Macmichael, to choose a favourable epidemic, and to expose children, who had not had the disease, freely to it. The proposition was not unphilosophical; but, conflicting as it did with the feelings of relatives, it was not likely to be extensively adopted. Few mothers could be prevailed upon to expose their offspring in this manner, especially as it is well known, that even in a favourable epidemic, cases may nevertheless prove fatal. A great source of anxiety during the existence of an epidemic, especially if it be unfavourable in its character, is either to destroy the miasm—contagious, if it be so—or to steel the system against its influence. With the view of destroying any miasm, or to avoid undue exposure, the different disinfectant agents, and especially the chlorinated preparations, have been freely used in apartments, and especially about the sick; great attention has, at the same time been paid to the diet, and to the condition of the bowels of those that are well; and they have been kept at home as much as possible when the epidemic has been raging. Yet all these precautions have been found insufficient; and the frequency with



which, the disease attacks children even when perfectly isolated, has thrown great difficulty in the belief of its being occasioned by any contagious miasm.

With the view of steeling the constitution against the morbid cause, the use of belladonna was proposed, between thirty and forty years ago, by the founder of the Homœopathic system. Hahnemann affirmed, that when given in small and repeated doses, it produced heat and dryness of the throat, swelling of the submaxillary glands and a cutaneous efflorescence. He thence inferred, that this medicine, from its producing symptoms analogous to those of scarlet fever, might prove a preventive against the infection of the latter. That such an efflorescence of the skin, with pain and redness of the throat, is induced by belladonna, has been deposed to not only by homœopaths but by others, as by Drs. A. T. Thomson, and Geo. Burrows; but the author has never witnessed it; nor would the eruption seem to have been esteemed necessary when the belladonna has been given as a prophylactic. The testimony in favour of its being possessed of prophylactic powers in scarlatina is considerable, and embraces the names of Berndt, Hufeland, Koreff, Thiébaud, Oppenheim and others, and it is asserted that at a discussion in the Harveian Society in 1833, the probable efficacy of the practice was admitted by Sir David Barry and others.

During the winter of 1840-1, several villages in the neighbourhood of Valenciennes, in France, were ravaged by scarlatina; and Dr. Stievenart was induced to test the prophylactic influence of belladonna, in consequence of the great fatality of the epidemic—30 of 96 attacked having died. In a small village of 250 persons, 200 took belladonna and were preserved from the disease. Of the 50 others, 14 were attacked, and 4 died. In another village he gave the belladonna to the children at the public school, and allowed them to continue at their lessons, and have communication with the other children of the village. All to whom the belladonna was administered escaped; but a few, who refused to take it, suffered. Bayle affirmed, in 1830, that of 2027 persons, to whom belladonna was administered, 1948 were preserved, and 79 attacked; and M. Dusterberg affirms, that by means of the belladonna administered for two weeks, he preserved every one who took it. In order to ascertain the real value of the prophylactic, he purposely omitted to administer it to one child in every family, and this child alone, according to his report, was seized with the disease. On the other hand, the belladonna has failed to exhibit any prophylactic powers in the observation of many respectable practitioners; some of whom are referred to by Dr. Pereira, who remarks, that in England there is no extended series of observations to cite, but that the cases with which he is acquainted are decidedly against the efficacy of the remedy. He refers to a remarkable failure in the practice of Dr. Sigmund in a family of eleven persons, who took the belladonna, yet every individual contracted the disease. Dr. Pereira adds, that whilst the facts, brought forward in favour of the existence of this prophylactic power, are only negative, those which can be adduced against it are positive; for twenty cases of failure, he conceives, are more

conclusive against it, than one thousand of non-occurrence are in favour of it.

During the prevalence of different epidemics of scarlet fever, the author has endeavoured, although not on an extensive scale, to test the efficacy of belladonna in this respect; nor has he felt at liberty to discard the evidence because the proposition originated in the views professed by Hahnemann and his followers. It need scarcely be repeated, that the efficacy of preventives cannot in any case be readily established, because, granting that the individual escapes, it would still remain to be shown, that he would necessarily have had the disease, if he had not taken the presumed prophylactic. All the author can say is, that until the winter of 1843, none of the children to whom he administered it took the disease. At that time, during the prevalence of scarlet fever in his own neighbourhood, the belladonna was sedulously administered to his children, five in number; two of whom, the youngest three years old, and the oldest six, after having taken the belladonna for six weeks, were attacked,—the others escaping. The disease was severe, but it was not attended with any specially alarming symptoms.

A writer on diseases of the skin, Dr. Green, is disposed to consider the question of protection to be almost settled. "Whatever," he says, "be the view taken of the manner in which the atropa belladonna acts, there seems little room to doubt of its prophylactic powers in scarlatina; those who have taken this medicine, generally escaping the disease altogether, or, if they do become affected, having it in the mildest possible form." The common mode of administering it is, to dissolve three grains of the extract of belladonna in one fluidounce of distilled water. Of the solution, three drops are given twice a day to a child under a year old; and one drop for every year above that age. It is asserted, that even these minute doses have brought out an eruption similar to scarlet fever.

If belladonna really possesses any anti-scarlatinous virtues, this can only be tested by repeated experiments, which, by the way, alone established the anti-variolous power of the vaccine virus,—a power, long contested with much obstinacy by many, until the evidence became overwhelming. "Such a simple means of escaping entirely, or mitigating the violence of so serious a disease as scarlet fever"—observes the writer last cited—"is always worthy of a trial. I had very lately an opportunity of witnessing the good effects of this medicine among the children assembled at a boarding school, where scarlatina broke out; four of the children, who were placed under my care, and to whom I prescribed the belladonna, escaped entirely; whilst among the others, to whom no prophylactic remedy was given, the disease spread so extensively as to cause the temporary suspension of the business of the establishment."

Until experiment shall establish the powers of belladonna in this respect, it is of course of moment, that along with it the ordinary precautions, before inculcated, should be carefully taken. The great danger, indeed, of all reputed prophylactics consists in the confidence

they occasion, so that persons are apt to expose themselves more heedlessly to the causes than they would otherwise be led to do.

In regard to the period at which scarlet fever becomes communicable—if it be communicable at all—the same remarks apply as to measles. It is probably so from the very commencement of the eruptive fever, and until desquamation has been completed; nay, it is affirmed to have been communicated by a person several weeks after the period of desquamation; but these cases are apocryphal. The same period of separation of the sick from the healthy ought, perhaps, to be observed as in the case of measles,—about three weeks. Many believe, that it is so virulently communicable, that clothing, furniture, &c., may convey it, and for a long time after they have received the miasm from the possessor.

The period, which elapses between exposure and the breaking out of the disease, is variously stated—from one day to ten. It is uncertain. In one case, in which the disease seemed to be produced by inoculation, seven days elapsed before the appearance of the eruption.

### 3. NETTLE RASH.

SYNON. Urticaria, Febris urticata, Urticaria porcellana, Cnidosis, Enanthesis urticaria, Uredo, Scarlatina urticata, Purpura urticata, Porcellana, Exanthema urticatum, Epinyetis pruriginosa, Essera, Aspretudo, Uredo porcellana, Papulæ cuticulares; *Fr.* Urticaire, Fièvre ortiée, Porcelaine; *Ger.* Nesselsucht, Nesselfieber, Nesselausschlag, Porzellanfieber.

**Diagnosis.**—This is by no means an uncommon eruptive fever; and is essentially characterized by long prominent patches, or wheals, of various sizes, and irregular shapes. The elevations are usually of a red colour, with white wheals on the surface; at times, however, there is little or no redness, and the elevations are paler than the rest of the surface. In all cases, there is more or less sensation of burning, and very troublesome itching, especially when the patient gets warm in bed. The eruption is usually preceded by manifest signs of gastric disturbance,—such as nausea, and, at times, vomiting; loss of appetite; thirst; coated tongue; and, almost always, more or less febrile excitement. Occasionally, indeed, the skin is extremely hot and dry, and the pulse very quick and active. After the eruption has appeared fully, the fever usually abates, and the main irritation is that occasioned by the troublesome heat and itching, which compel the patient to scratch; when each movement of the extremity of the fingers is frequently followed, by the eruption, that marks their progress.

As many as six varieties of urticaria have been described by *ex professo* writers on cutaneous diseases, but there seems to be no practical necessity for so much subdivision.

Nettle rash is very irregular in its course, and in the functional phenomena that attend it; being, at times, accompanied with so little constitutional irritation, that it seems to be entirely local; whilst in other cases, as before remarked, the pyrexial symptoms are very severe. Occasionally, too, it disappears and recurs at uncertain intervals, and, in those strongly predisposed to it, the eruption reappears, whenever the stomach is manifestly disordered. This form of the disease is sometimes very obstinate; continuing, at times, for months, and even years.

**Causes.**—The disease can very frequently be traced to a disordered state of the stomach. There are certain articles, indeed, which in particular constitutions or idiosyncrasies occasion it. Shell-fish, for example, induce it invariably, in some persons, and may do so in all, provided they have been kept too long, or a predisposition exists in the individual at the time. The lobster, the crab, and the mussel; certain kernels, too, and especially the bitter almond; mushrooms, cucumbers, salad, and even oatmeal, vinegar and honey have induced it. The author has known several persons, who were unable to eat raspberries without the supervention of urticaria, and there are those who can take raspberries and cream with perfect impunity, but who are sure to suffer, if the cream be omitted. One of the most severe cases of urticaria, which the author has seen, was produced by a tablespoonful of new milk. The patient was a strong, healthy man, but, owing to idiosyncrasy, he was unable to take this article of diet, so harmless to most persons. There are certain medicines, too, whose free use causes the same disorder, especially in particular constitutions,—the balsam of copaiba, cubebs, and the turpentes, for example.

It has been suggested by Dr. Mackintosh, that individuals, who are subject to urticaria, and diseases of a similar nature, during youth, are those who, in after life, are liable to be affected by gout. The author has not noticed this.

**Treatment.**—When nettle rash has been caused by any article of diet, which disagrees with the individual, it may be well to administer a gentle emetic (*Pulv. ipecac.* gr. xv.—xx.) and in almost all cases, whether an emetic be indicated or not, it will be advisable to give gentle cathartics.

R.—Rhei pulv. gr. iij.  
Magnesiæ gr. v.  
Zingib. pulv. gr. ii.—M.

One of these powders to be given three times a day.

Although the febrile symptoms at times run high, it can be rarely necessary to have recourse to bloodletting; yet no hesitation should exist, if the symptoms appear to demand it. In such cases, the blood has generally been found to be buffy. It has been recommended, that in the common febrile nettle rash, should the eruption appear upon any one region more than another, the parts should be bathed with a cold acetate of lead or subcarbonate of potassa wash; which, it is said, will generally be grateful; yet danger would appear to proceed at times from the repulsion of the exanthem. It is, of course, indispensable to be careful as to diet, and especially to avoid any article which is known to disagree, and especially to produce the disease in question.

In the *chronic form* of the disease, equal attention to diet is requisite, and excitant aliments and drinks of all kinds should be avoided. Where the gastric functions are in a state of atony, it may be advisable to unite charcoal and magnesia as a tonic and aperient.

R.—Carbon. ligni pulv. gr. xv.  
Magnesiæ gr. v.—M.

To be taken three times a day, an hour before each meal.

The cold infusion of bark, acidulated, or not, with dilute sulphuric

acid,<sup>a</sup> is also useful, especially if the eruption assumes anything like the intermittent type.

<sup>a</sup> R.—Infus. cinchon. f ʒvj.  
Acid. sulphur. dilut. gtt. xxx.—M.

Two tablespoonfuls, three times a day.

In such case, the sulphate of quinia may be administered,<sup>a</sup> or arsenic, (*Liq. potass. arsenit. gtt. viij. ter die.*)

<sup>a</sup> R.—Quinice sulphat. gr. iv.  
Acid. sulphuric. dil. gtt. xx.  
Aque f ʒij.—M.

Dose, a third part, three times a day.

Usually, the disease is of very little consequence, and often disappears without the use of any remedies. It has been properly remarked, indeed, by Dr. Mackintosh, that much more depends upon the patient himself than upon the remedies which a physician may prescribe. "The patient must find out by experience the articles of food which disagree with him, and he must have sufficient resolution to avoid them for a time." The hot air or vapour bath has been advised in chronic cases by M. Schedel, but neither can be often required.

#### 4. ERYSIPELAS.

SYNON. Ignis sacer, Ignis Sancti Antonii, Rosa, R. volatica, Emphlysis erysipelas, Erythropyra, Febris erysipelatos, F. erysipelacea, Rose, St. Anthony's Fire; *Fr.* Erysipèle, Feu St. Antoine, Feu sacré, Mal St. Antoine, Fièvre érysipélateuse; *Ger.* Rose, Rothlauf, Rothlaufieber.

This disease is characterized by redness of the skin, which has a shining appearance; tumefaction of the integuments, with a sensation of tension, and peculiar smarting and heat, which may be accompanied, or not, by marked fever. When pressed upon by the finger, the redness disappears, but speedily returns as the pressure is withdrawn. It is a very common affection, and usually attacks the parts that are exposed to the air; hence erysipelas of the face is by far the most common form.

**Diagnosis.**—The prodromic or premonitory symptoms are those of febrile and inflammatory diseases in general, and the intensity of these usually bears some relation to the severity of the attack. But one of the marked and most common prodromic phenomena, since—according to M. Grisolle—it is seen in two thirds of the cases, is a painful engorgement of the lymphatic ganglions, which receive the vessels that proceed from the part about to be attacked with erysipelas, although the skin may as yet present no appreciable change of colour, thickness, temperature, or sensibility. This engorgement of the ganglions, according to M. Chomel, precedes by one, two, or three days, the appearance of the erysipelas. After an uncertain period, during which there is often more or less pain, a more or less circumscribed redness of the surface is observed, with swelling, tension, pain and heat, indicating unequivocally the nature of the affection. The redness is, at first, restricted to a small space, to the tip of the nose, for example, in many cases of erysipelas of the face, whence it spreads centrifugally, over a greater or less surface, so as to form a patch with very irregu-

lar margins. The shade of red often varies in the course of the disease; and, as before remarked, it disappears when pressed upon by the finger, and recurs when the finger is withdrawn. This, however, is more or less the case with every form of inflammation that involves the skin. The pain is not often very acute, but is rather annoying, and frequently accompanied by troublesome itching; and the sense of heat is at times pungent and scalding. The least contact augments the irritation in the inflamed part. About the third or fourth day, the cuticle covering the inflamed surfaces is frequently raised by small vesicles, owing to the effusion of yellowish serum beneath it; these usually burst sooner or later, so that the surface becomes covered with a crust. This appearance has given rise to a division of erysipelas termed the *bullar* or *phlyctenoid*; but, as has been properly remarked by Dr. Mackintosh, in regard to the varieties that have been made of erysipelas, all unnecessary divisions of diseases are useless in theory, and injurious in practice.

When the disease is of a highly inflammatory character, and invades the parts beneath,—it has been usually termed *Erysipelas phlegmonodes*; Fr. *Erysipèle phlegmoneux*; when accompanied with phlyctenæ, and the inflammation terminates in gangrene, *Erysipelas gangrænosum*; Fr. *Erysipèle gangreneux*; and when associated with the effusion of fluid into the subcutaneous cellular membrane, *Erysipelas œdematosum*; Fr. *Erysipèle œdémateux*. The disease, too, is more or less inflammatory according to the condition of the constitution; hence, when the febrile symptoms are those of ordinary inflammation, the disease may be simple or phlegmonoid; whilst, if the powers of the constitution be enfeebled from any cause, and especially from hard drinking, so that the fever is typhoid, there may be a strong tendency to a gangrenous termination. The most favourable and the most usual termination—speaking generally—is by resolution. The inflammatory phenomena gradually decrease; the redness disappears and is replaced by a shade of yellow; and the cuticle, which had been overstretched, ultimately desquamates, either in the form of a whitish scurf, or of shreds of larger size. So long, however, as the erysipelas is of a vivid red, and the margins of the inflammation form an evident relief, it may be pronounced that the progress of the disease is not arrested; but if the redness becomes less and less intense, and fades towards the circumference, without any elevation of the integument there, we may infer, that the disease will not extend farther.

It must be borne in mind, also, that erysipelas is one of the “changeable phlegmasiæ,” and that it may disappear from one part and present itself in another, *Erysipelas ambulans*; returning also to its former seat many times before it finally disappears. This tendency applies to the disease generally, yet when it does shift its seat, it has been termed *Erysipelas erraticum*. The metastasis may take place to internal parts, as where the exanthem leaves the face, and affects the meninges of the brain.

When erysipelas attacks the face, the first evidence may be a slight redness at the tip of the nose, which is manifestly tumefied; thence the eruption spreads, and the swelling becomes at times so great that the

features cannot be distinguished,—the cellular tissues of the eyelids, lips, cheeks, and ears admitting of ready infiltration. The constitutional symptoms consist of general febrile irritation,—sometimes inflammatory, at other's typhoid, and, at others, not markedly either the one or the other. Generally, there is considerable cephalalgia; sleeplessness, and more or less delirium, and, at times, positive meningitis. When the erysipelas invades the hairy scalp, the redness is not great, owing, perhaps, to the inflammation being chiefly seated in the subcutaneous cellular membrane; but the scalp is exceedingly painful to the touch. Occasionally, suppuration takes place, and even gangrene. Portions of the scalp slough away, and destruction of the pericranium ensues, leaving the bones exposed. In other instances, the cellular membrane surrounding the parotid and cervical ganglions suppurates.

Ordinary erysipelas, occurring in a strong hearty individual, is rarely fatal. The most dangerous form is that which attacks the face and hairy scalp. When, however, it supervenes in the course of another disease, which has already enfeebled the powers of the patient, it is always an alarming occurrence; for if not fatal of itself, it may hasten the fatal event. In infants it is always alarming, on account of the weakness of the patient, the visceral complications that are apt to be present, and the frequency of gangrene. Of 45 cases, observed by MM. Billard, Bang, and Oesterleben, and cited by M. Grisolles, 31 had a fatal termination.

Erysipelas of the extremities is, at times, slight; at others, severe, and involving the deep-seated parts, so as to occasion extensive sloughing. The constitutional irritation is, occasionally, excessive and overwhelming. When the affection appears to spread from within outwards, and is induced by disease in the deep-seated parts, it has been termed *erysipeloid* by M. Dupuytren, and is altogether a surgical affection.

**Causes.**—Erysipelas may occur in persons of all ages. It has been seen in the new-born infant, and in advanced life. According to the census of Ireland for 1841, it proved more fatal to males than to females, in the proportion of 100 of the former to 73·52 of the latter. It is a fatal affection amongst young infants, according to M. Trousseau, almost invariably terminating in death when it occurs during the first month more especially. Its danger gradually diminishes as the child advances in age; but still, according to his experience, even when it attacks after the fourth month, one half the cases terminate fatally. It unquestionably occurs more frequently in those of particular constitutions or predispositions,—and it has been affirmed, but on insufficient grounds, “in those who are liable to affections of the skin, to gout, and who are subject to disorder of the stomach and bowels.” It may be caused by the action of external agents;—by all those that can induce erythema—as by irritating and hot substances applied to the skin. Burns and scalds, when to a certain degree, are inflammations of the skin or forms of erysipelas. Yet some have separated the inflammations of the skin, which is induced in this manner, from erysipelas, which they affirm must always be dependent upon constitutional causes. This, however, is mainly an affair of defi-

nition. Whether a person be predisposed to erysipelas or not, he will have it induced by irritating agents,—such as those already referred to, as well as by cantharides, mustard, &c.; but there may be some advantage in regarding these as belonging rather to erythema,—which, by the way, is esteemed by many as the simplest form of erysipelas, whilst we look upon erysipelas as always requiring a constitutional predisposition, which gives occasion to the development of the exanthem in one person under influences that would be wholly inoperative in another. Such, indeed is the view of a distinguished modern pathologist, M. Chomel, who maintains, “that erysipelas is never the result of an external cause; or, at least, if an external cause concur in its production, it has but a secondary agency in its development. There must be the concurrence of an internal cause; of a particular predisposition unknown to us;”—and after referring to various causes, that have been imagined by different individuals, he adds: “If we endeavour to know the causes of this singular predisposition, by comparing the circumstances in which it exhibits itself, we most commonly find nothing that can explain it, and are obliged to refer it to individual predisposition,—that is, to an unknown cause.” It appears in all seasons; but in spring and autumn—it is affirmed—most frequently. The disease is more apt to supervene on wounds of the head, whether from accident or art; and it has been already remarked, that it occurs spontaneously more frequently on the head, but slight constitutional predisposition in these cases being required for its development; in some persons, too, the predisposition is so great, that traumatic erysipelas is produced by the slightest agencies. The intemperate,—they who have been accustomed to the daily use of alcoholic potations, or who—like the draymen of the British metropolis, are allowed large quantities of porter or ale daily—are especially liable to it. A scratch of a pin in such persons will sometimes cause erysipelas very difficult of cure.

MM. Andral and Gavarret found the blood, in ordinary erysipelas attended with fever, so rich in fibrin, and the quantity of corpuscles so much reduced, as to leave no doubt of the existence of hyperinosis. M. Simon, however, remarks, that it is by no means easy to detect the peculiar properties of the blood depending upon the disease, for as soon as any inflammatory fever is complicated with it, the blood, from that cause alone, will assume a state of hyperinosis. M. Schönlein states, that the serum is always tinged yellow by the colouring matter of the bile; that the proportion of the serum to the clot is large; and that the consistence of the clot is inversely as its size. In eight analyses of the blood of five persons, four of whom were suffering from erysipelas of the face, and one from inflammatory erysipelas of the feet, MM. Andral and Gavarret found, in seven, the fibrin materially increased; in three instances, it amounted to 5·0, in three, to 6·0, and in one to 7·0. In a much shorter and milder case, in which there was but little fever, it amounted to only 3·6.

The urine is frequently loaded with bile pigment, and is of a reddish-brown or red colour, and where the disease is passing away, fawn coloured precipitates are deposited, and it becomes clear. (*Schönlein.*)



When there was much fever M. Becquerel found it to be of the inflammatory type. In five cases, in which the morning urine was daily examined with care, the characters of inflammation were present in a very marked degree. The specific gravity varied from 1021 to 1025. In four of the cases, the urine threw down a reddish sediment, and in two a little albumen was occasionally present. (*Simon*.)

Erysipelas seems to prevail, at times, epidemically. It certainly occurs endemically or endemico-epidemically; for we occasionally observe it in hospitals, attacking almost every one in the surgical wards, and causing the surgeon to hesitate to perform operations that are not indispensably necessary, under the fear that the wound may be attacked by it. In these cases, the spread of the affection must be either owing to the inmates of the ward being exposed to the same influences, which induce in them the requisite predisposition; or it must extend by contagion. The pathologists of the European continent generally discard the latter agency; and M. Andral considers, that the view has but few supporters except in England; "that it does not bear examination, and is every day contradicted by observation." When once in the wards of an hospital, it is extremely difficult to get rid of it; and it is the source of much anxiety to the surgical attendant.

An epidemic erysipelas, known by the popular name of "black tongue," prevailed in some parts of Indiana, in 1843; an account of which has been published by Dr. George Sutton, of Aurora, Indiana; and "erysipelatos fever" has been described by Dr. Charles Hall, of Burlington, Vt., and George J. Dexter, of Lancaster, N. H., as occurring in the northern section of Vermont and New Hampshire in the years 1842-3, and by Dr. J. A. Allen; by Dr. J. F. Peebles as it prevailed in Petersburg, Virginia, during the winter and spring of 1844-5; and by Dr. Jesse Young, of Chester, Pennsylvania, as he observed it there in the summer of 1844. This was a malignant form of fever, attended at the onset with sore throat, and subsequently with erysipelatos inflammation of the integuments, and often with inflammation of the serous membranes. The inflammation of the skin and cellular membrane produced, at times, disorganization and separation of contiguous parts to a great extent. A semi-putrid thin fluid was infiltrated into the cellular tissue, which was so acrid, that when discharged, "the hardest steel was directly penetrated by it as by nitric acid," and instruments used to open abscesses were after a few hours, "entirely eaten through." No analysis of the fluid was attempted. When internal organs were affected, the patients almost invariably died. It was generally believed to be communicable.

It must be admitted, that the causes of erysipelas are sufficiently obscure; and that it occurs sporadically as well as epidemically, from influences that cannot, in the existing state of knowledge, be accurately appreciated.

**Pathological Characters.**—When a part, that has been affected with erysipelas, is cut into after death, it will be found to have lost much of the redness, but not of the tumefaction. A bloody serum exudes from the subcutaneous cellular substance, or, if the inflammation have gone on to suppuration, pus will escape, but it is not usually like that

of an abscess occurring in a person of otherwise good health. It is rather sero-purulent, and has, at times, flakes of coagulable lymph in it. In very extensive affections, the mischief is proportionate; and, according to the precise pathological condition, there may be death of parts, or evidences of phlebitis; and a puriform fluid may be found in both the veins and lymphatics. In most cases of fatal erysipelas, extensive mischief is likewise met with in the serous membranes of the great splanchnic cavities; and, in many cases, the mucous membranes have been greatly involved. Dr. Mackintosh regards them as being most frequently found in a state of inflammation; and he affirms, that in many instances, the fatal termination has been distinctly traceable to bronchitic inflammation. When the erysipelas of infancy proves fatal, it is often owing to the supervention of peritonitis; and M. Trousseau states, that it is principally observed when puerperal fever prevails in the wards of the lying-in hospitals of Paris.

**Treatment.**—In slight cases of erysipelas, not much attention is needed in the administration of internal remedies. It may be sufficient to keep the patient at rest, to make him adopt the antiphlogistic regimen, and to prescribe saline cathartics—as sulphate of magnesia. If the disease, however, be severe, more active remedies may be needed, such as general bloodletting, cathartics, and antimonials, in full doses.

R.—Antim. et. potass. tartrat. gr. iv.

Mucilag. acaciæ fʒij.

Aquæ fʒvj.—M.

Dose, a fourth part, four times a day.

Nor should the practitioner be deterred from the employment of the lancet in the early stage of the disease, although typhoid symptoms should present themselves, unless careful consideration of the powers of the patient, and of the prevailing epidemic influence, should contraindicate it. In young and active individuals, the abstraction of blood should be copious, in order to make a decided impression on the disease at the outset.

Next to general bloodletting may be placed the application of leeches, which may be demanded, where apprehensions are entertained in regard to the propriety of general bleeding, or in addition to it. The leeches should be applied over the inflamed part, not around it as advised by some. When placed on the seat of inflammation, they draw blood immediately from the over-distended capillaries, which, of itself, ought to be salutary; but, besides this, the evacuation of the capillaries, and the irritation produced by the leech-bites, may excite their tone, prevent subsequent distension, and thus remove the hyperæmia. On the other hand, when the leeches are applied around the inflamed part, they cannot empty the affected capillaries, and by attracting blood into the neighbouring vessels, they may occasion a greater afflux towards the capillaries concerned in the inflammation. The number of leeches must be regulated by the powers of the patient and the character of the disease. The author is in the constant habit of applying them in erysipelas, and he has not once seen the dreaded effects of ulceration or mortification ensue: and the same has been the observation of others. In erysipelas of the face, where the patient is

young and active, it may be first advisable to bleed, and afterwards to apply from fifteen to thirty leeches—one half the number behind each ear. Where the powers are less active, it may be sufficient to adhere rigidly to the antiphlogistic treatment, without using either the lancet or leeches; and, in all cases it must be borne in mind, that, in the opinion of many, much evacuation increases the tendency of the disease to return.

Emetics have been highly extolled, especially in cases of the disease that are accompanied by gastric disorder,—the revulsion and equalization they induce sometimes breaking in immediately on the morbid action.

The author is rarely in the habit of applying any topical remedies to the inflamed part. He has found marked advantage, however, from carefully excluding the air from it, by covering it with carded cotton, as in cases of burns and scalds, a plan which he finds—from Sir George Lefevre's *Apology for the Nerves* (Lond. 1844)—is adopted by many of the German physicians. Chlorinated lime has been highly recommended,<sup>a</sup> applied by means of folds of linen.

<sup>a</sup> R.—Calcis. chlorin. ℥j.  
Aquæ Oij.—M.

In the phlegmonous form of the disease, it has been advised to make free incisions through the inflamed integuments down to the fasciæ of the muscles, so as to completely unload the over-distended vessels and fibres, and to admit of the discharge of any effused serum or purulent matter. No means are more effectual—it is asserted by their advocates—to afford present relief, and to prevent the formation of abscesses, or the supervention of gangrene. Should any of these events occur, the disease passes into the domain of Surgery. It is, indeed, in every form, placed by many in the domain of External Pathology. M. Velpeau has employed sulphate of iron with advantage as an application to the inflamed part. He uses it both in solution<sup>a</sup> and ointment.<sup>b</sup>

<sup>a</sup> R.—Ferri sulphat. ℥j.  
Aquæ Oj.—M.

<sup>b</sup> R.—Ferri sulphat. ℥j.  
Adipis ℥j.—M.

M. Velpeau affirms, that the former exerts more control over the inflammation, generally subduing it in two days.

Lead water, and cold water—even iced water—have been advised by many; and, to allay the troublesome itching, and the irritating effects of the air, it has been recommended to wash the parts frequently with flaxseed, or infusion of slippery elm; but, as already remarked, the author is in the habit of treating the disease constitutionally, leaving the part in quietude, and removed from all irritation. Dusting powdered starch, prepared calamine, or oxide of zinc, or finely powdered magnesia, or flour and subnitrate of bismuth in equal parts, over the surface, sometimes allays the acrid heat, and forms a coating against the air; but care must be taken, should vesicles form, that the exuded serum does not cause a crust, which might be the source of irritation.

The application of mercurial ointment to the inflamed parts has

been proposed, and it has been extensively used; but the author has not been able to notice any better effects from it than from greasy applications in general; all of which seem, at times, to aggravate rather than relieve. M. Grisolle, indeed, expresses a desire, that it should be proscribed, "as it frequently produces inconvenient, interminable salivations," and in two instances he has seen the life of the patient in danger, in consequence of an enormous swelling of the tongue, which prevented deglutition, and impeded the entrance of air.

Compression has, occasionally, been of speedy and permanent benefit,—the pain caused by it, being very transient, but it would seem to be more appropriate in the after-stages of the disease, and especially in cases of less acuteness, which are accompanied with more œdema than usual. It has been affirmed, indeed, by M. Schedel, that it involves the danger of inducing gangrene, "and as it can only be employed at the commencement of an attack, when the efficacy of antiphlogistic remedies is incontestable, it would not be justifiable to waste time upon an experiment generally futile, and often pernicious." Such is not the result of the author's observation. He has often employed methodical compression in erysipelas, and has frequently found it to be not "futile" but efficacious, and in no instance has he noticed any pernicious consequences.

Blisters to the erysipelatous part have been strongly advised, and they are frequently productive of good effects. In these cases of tegumentary inflammation, a dilated and atonic condition of the extreme vessels generally, if not always, exists, which the stimulation of the vesicatory is often successful in removing. There are cases, too, in which the new action, induced in the skin by drawing the moistened extremity of a stick of nitrate of silver around—but at a short distance from—the diseased integument, has succeeded in restricting the spread of erysipelas. It is but proper to remark, however, that it has very often failed with the author, and is generally, perhaps, an agency on which but little reliance can be placed. M. Grisolle is of opinion, that the good effects ascribed to blisters and nitrate of silver in limiting erysipelas ought to be assigned to the natural course of the disease, rather than to those agents; and in confirmation of this view, he states, that, with M. Chomel, he has employed them exclusively around erysipelas, when it has been well circumscribed, red, hard, and forming a relief at the circumference—in other words, in cases which evidently were disposed to invade fresh surfaces; and in no case did he find blisters or the application of the nitrate of silver stop the progress of the inflammation.

The application of the tincture of iodine was recommended, a few years ago, by Mr. Davies, of Hertford, England,—diluted with two parts of alcohol to one of the tincture. This was applied over the affected parts by means of a camel's-hair brush. It appears to act like a strong solution of nitrate of silver, forming a coating over the inflamed surface and thus protecting it from the air, whilst, at the same time, it acts as an excitant to the overdilated capillaries. In local erysipelas or erythema, the author has used the tincture of iodine with

much success, undiluted, as well as in the form advised by Mr. Davies; and the testimonials in its favour are numerous.

When the disease attacks those of shattered constitutions, or old individuals, whose powers are enfeebled, great caution is needed in the management. It may not be advisable to abstract blood, either generally or locally, by means of leeches: slight punctures will, however, afford relief. There are some, indeed, who do not approve of active antiphlogistic treatment in any form of erysipelas, and who prefer the administration of tonics even from the very beginning.

A writer of authority, Dr. Robert Williams, states, that the mode in which he is "in the habit of treating idiopathic erysipelas, whatever may be the part affected, or with whatever symptoms it may be accompanied," is as follows. The patient is put on a milk diet, the bowels are gently opened, and from four to six ounces of port wine, together with sago, allowed daily. "This mode of treatment," he says, "it is seldom necessary to vary throughout the whole course of the disease: for the delirium, if present, is generally tranquillized; if absent, prevented; the tongue more rarely becomes brown, or only continues so for a few hours; while the local disease seldom passes into suppuration or gangrene. In a word, all the symptoms are mitigated, and the course of the disease shortened. I have pursued this system," he adds, "for several years, and I hardly remember a case in which it has not been successful." Dr. Williams does not limit the quantity of wine to that above stated. In more severe cases, where the local affection continues to extend, and the delirium to augment, he increases the wine to eight ounces, and adds quinia to it.

In all cases we must be careful not to over-stimulate by our internal agents, and to bear in mind that by stimulants we can only act upon the excitability already in the system, and may exhaust it by their injudicious use. Often we trust altogether to the recuperative powers. In other cases, we think it advisable to administer tonics—as the vegetable bitters, or the sulphate of quinia; and to allow wine whey, beef tea, &c. The more diffusible excitants are rarely, if ever, of greater efficacy than the permanent tonics just mentioned. Especially is this tonic management necessary, when the inflamed part exhibits a tendency to gangrene. The ordinary topical remedies, which are used by the surgeon in gangrene—charcoal poultices, and solutions of the chlorides of lime and soda—not of the chlorides of calcium and sodium, as recommended by M. Schedel—then become necessary.

Throughout the whole disease, opium and its various preparations may be freely allowed, with the view of allaying pain. In such cases, it must be given in full or sedative doses.

#### *Induration of the Cellular Tissue.*

SYNON. *Induratio telæ cellulosæ neonatorum*; Scleremia, Sclerosis, Scleroderma, Compact œdema of the cellular tissue, Skinbound disease; *Fr.* Endurcissement du tissu cellulaire, *Œdème du tissu cellulaire des nouveau-nés*, *Asphyxie lente des enfans nouveau nés*; *Ger.* Zellgewebsverhärtung der Neugeborenen.

This disease has been often observed in the French hospitals, and is said to have been so fatal, that in the years between 1808 and 1811 there died, in the *Hôpital des Enfans trouvés*, 576 out of 643 who

were attacked. A recent writer, however—M. Billard—believes it to be incorrect to refer the mortality to this affection. There often, he says, exist, at the same time, affections of the brain, lungs and intestinal canal, much more serious than œdema, and much more fatal to children.

The difference amongst pathologists as to the precise character of the disease renders it difficult to know where to place it. One, M. Troccon, supposes, that as hepatization of the lung has often been seen along with it, pneumonia is the principal malady; another, M. Denis, considers it an entero-cellular phlegmasia, and another, M. Broussais, is of opinion that it is an erysipelas approximating to the phlegmonous character. Under these conflicting views, it may not be inappropriate to consider it here. It is certainly an affection that is generally accompanied by serious lesions of internal organs, and on which there is reason to believe it is often dependent. In the few cases, which the author has seen in the adult, there was always concomitant lesion of some thoracic or abdominal viscus.

**Diagnosis.**—Two varieties of induration of the cellular tissue are admitted;—the one *serous* or *œdematous*, the other *concrete* or *adipous*.

The *œdematous form* appears to attack the fœtus as well as the newborn. It is a hard, resisting, cold, pale or livid tumefaction of the extremities or cheeks,—the consistence varying according as the induration is slight or considerable. The tumefaction is soft and doughy, but differs from œdema in not preserving the impression of the finger; and from emphysema, in not being elastic or crepitant. The temperature is always below the natural, and the more so when the tumour is recent and considerable; when, however, the affected parts are warmed, they soon resume their ordinary temperature. The colour of the skin becomes purple or livid; the perspiration is suspended, so that there is a remarkable dryness of the cutaneous surface; and certain muscles are permanently contracted, whilst others are greatly relaxed. Along with these local symptoms, the pulse is small, contracted, and slower than natural; the tongue is white or slightly red at the edges; and vomiting, diarrhœa, or constipation may be concomitant. Later on, deglutition becomes difficult, and the respiration laborious. The child is restless, and there is something peculiar about the cry, which is weak and obscure. In proportion as the induration extends to other parts of the body, the general phenomena become more alarming; the child falls into a comatose condition; deglutition is almost impracticable; and death takes place from the first to the twentieth day. Occasionally, the disease terminates by resolution, when the affected parts gradually resume their suppleness and normal temperature.

In the *concrete form*, the indurated parts have the firmness of suet; the skin, which is of a yellowish-white hue, has the appearance of wax, and is bound down to the muscles; and the limbs appear to be studded with hard, irregular tumours. In the last stage, they seem as if they had been frozen, and their consistence is so great, that percussion is sonorous; they feel cold to the touch, and motion is impracticable. It would appear, however, that in this variety there are fewer nervous

symptoms, and that digestion, circulation, and respiration are less affected than in the serous variety.

**Pathological Characters.**—The areolæ of the cellular tissue are said by M. Valleix to be distended, in the first variety, by a greater or less quantity of a very albuminous serous fluid, which is transparent, colourless, or slightly tinged yellow or red: sometimes, according to M. Rostan, it is semi-concrete. It is stated, however, by Professor Carswell, that there is not a greater degree of coagulability than in the fluid of the œdema of adults. In the second variety, the adipose tissue appears to be surcharged with a sebaceous, opaque, thick, compact, yellowish matter, which is richer in stearin than ordinary fat.

Morbid appearances are met with in the brain, lungs, and digestive organs,—a circumstance which has given occasion to various opinions in regard to the primary seat of the disease. It has not been settled, however, whether these appearances were effects or causes, or simple concomitants. According to M. Grisolles, Professor Charcellay has found the kidneys almost always the seat of some alteration; and he thinks the pathological cause is frequently albuminous nephritis. M. Grisolles, however, from the results of numerous observations made in Paris by M. Valleix and M. Billard, is disposed to regard those cases as exceptional, in which renal disease was the cause of the œdema. M. Billard considers the disease to be nothing more than simple œdema, analogous to that which occurs in adults and old people, affected with diseases of the lungs, heart, and large vessels.

**Causes.**—These are wholly unknown. It is probable, however, that the disease may be dependent upon the same causes as give rise, at times, to dropsy in the adult,—impediments to the functions of circulation and respiration.

**Treatment.**—The great accumulation of blood, found in certain cases, in the internal organs, suggested the employment of leeches to the chest, and even of general bloodletting, which ought, however, to be practised with caution: the child should, moreover, be cased in flannel, and frictions may be made over the body, and especially over the affected parts. If these agents be insufficient to remove the disease, it will probably terminate fatally. The employment of emetics has been suggested with the view of removing mucus and exciting respiration, with the internal use of stimulants, as wine-*whey*. For subjects so tender, it is difficult to lay down any fixed plan of treatment. Much will have to depend upon the judgment of the practitioner in the individual case.

## II. VESICULAR ERUPTIVE FEVERS.

### I. MILIARIA.

**SYNON.** *Emphlysis miliaria, Miliaris, Febris miliaris, Exanthema miliare, Synochus miliaria, Purpura (of some), P. miliaris, Miliaria sudans, Miliaris sudatoria, Sudamina, Purpura alba, P. rubra, Papula sudoris, Miliary fever, Millet seed rash; Fr. Miliare, Millot, Millet, Pourpre blanc; Ger. Frieseln, Frieselfieber, Frieselexanthem.*

The sudamina, which appear in various diseases, have, by some pathologists, been separated from miliaria, but they are usually congenereous affections, and neither the one nor the other requires any long in-

vestigation. They are small prominent vesicles, about the size of millet-seed,—whence the name *miliaria*,—which are of a round shape, transparent, and contain a thin, watery humour, possessed of no viscosity. Under the separate diseases, it has been remarked, that they present themselves in the course of many affections, and especially such as are accompanied by sweating, whence the name *sudamina*. In typhoid fever, the eruption is regarded by some as one of the pathognomonic signs.

It usually appears upon parts of the body where the skin is fine and delicate—as upon the anterior part of the chest and abdomen, on the neck, groins, armpits, and umbilicus, and occasionally, over almost the whole of the body. The duration of the eruption is not usually long; occasionally, not more than a few hours; at times, however, it continues for days, the fluid becomes gradually absorbed, and no trace remains of the previous existence of the eruption.

In the wards of the Hospital La Pitié, under the care of a distinguished physician, M. Bouillaud, the subject of sudamina has attracted much attention, giving rise to the deductions referred to under another head;—*first*, that they are intimately connected with the actual or antecedent existence of prolonged sweats, without distinction of diseases, so that we may almost always conclude as to the presence of the one from that of the other; *secondly*, that they are in constant relation with the sweats,—numerous when these have been copious, and scarce under opposite circumstances; and *thirdly*, that the same relations exist in the different regions of the body,—that is, they are abundant in the parts where the sweats accumulate; and conversely.

In regard to the miliary fever which was at one time so common in the sporadic form, it has now almost disappeared, since the heating regimen has been mainly abandoned. The works of the older writers show, that it was the custom to load puerperal women with bed-clothes, and to administer heating articles to them. Miliary fever was then so common as to be considered a disease of the childbed state; but now we rarely or never see it.

The eruption of miliary fever is essentially the same as the sudamina; they may, indeed, be esteemed identical: the affection is always perhaps symptomatic when it occurs sporadically, and does not merit much attention. It has, indeed, been denied, by M. Chomel, that any such disease as miliary fever exists.

Examples of an entirely local variety of this eruption are seen at times, after friction with certain ointments, or the application of a cataplasm of linseed meal slightly rancid.

The epidemic form of sweating sickness, accompanied by a miliary eruption, *La Svette de Picardie*, *La Svette des Picards*, *Fièvre suante*, *La Svette miliaire*, has prevailed in different departments of France. It recurred in 1821, and was described at length, by M. Rayer, in a work, which he did the author the honour to transmit to him, and subsequently in 1837, and in 1841 and 1842. M. Rayer considers the disease to consist of a simultaneous inflammation of various tissues, and proposes to class it with variola, rubeola, and scarlatina. It



occurred under two forms,—the mild and malignant,—the latter proving fatal, in many cases, by the supervention of encephalic mischief. MM. Rayer and Bricheteau have given an account to the *Académie Royale de Médecine* of an epidemic, which prevailed in 1841, in several communes of La Dordogne, and La Charente. In one part of La Dordogne, of a population of 82,200 persons, 10,400, it is affirmed, were attacked by the disease, of whom 800 or 1 in 13 died. In the space of a year and upwards, the epidemic spread consternation through five departments of France, La Dordogne, Le Lot et Garonne, Le Calvados, Le Jura, and La Manche. An apparently independent epidemic appeared in the East of France, in Haute Saone, in March 1842.

**Treatment.**—In an ordinary case of miliaria, as well as in the epidemic form, the management must be conducted according to general principles. In the simple variety, the antiphlogistic treatment and regimen are alone necessary. In the epidemic variety, the treatment must repose on general principles. The recent epidemic of La Dordogne was found to prevail most in marshy situations, and to be treated most satisfactorily in the same manner as intermittent fever,—by the sulphate of quinia and other tonics; particular care being taken not to interfere in any manner with the progress of the miliary eruption. To employ the language of M. Parrot, sulphate of quinia or bark was “the anchor of safety.”

## 2. CHICKEN-POX.

**SYNON.** Varicella, Pseudo-variola, Variola spuria, V. volaticæ, V. nothæ, V. illegitimæ, V. pusillæ, Emphlysis varicella, Exanthea varicella, Synochus varicella; *Fr.* Varicelle, Petite vérole volante, Vérolette; *Ger.* Varicellen, Falschen unechten Pocken, Falschen Blattern, Wilden Blattern, Wasserpocken, Windpocken, Steinpocken, Schaafpocken.

This disease obtained its name from the notion that it is a variety of small-pox; and, of late years, owing to the existence of vesicular eruptions having a perfect resemblance to varicella, and occurring during the prevalence of epidemic small-pox, the identity of the two diseases has been maintained, by Dr. J. Thomson. This was, however, an accidental coincidence; and few now doubt, that the characteristics of the two affections are strikingly different, both in their progress, phenomena, and capability of being communicated by infection. In extensive epidemics, it not unfrequently happens, according to M. Schedel, that three groups of eruptions prevail simultaneously,—small-pox, modified small-pox, or varioloid, and a vesicular eruption having all the characters of varicella.

**Diagnosis.**—The chief characters of varicella are, that it is a non-contagious disease, characterized by a more or less copious vesicular eruption, generally preceded and accompanied by febrile symptoms,—desiccation beginning from the fifth to the eighth day. There is not generally much difficulty in discriminating between chicken-pox and small-pox; but it is not always so easy to distinguish it from modified small-pox. The eruption of the latter, as will be shown hereafter, is pustular; the pustules being small, circular, and commonly depressed in the centre. In chicken-pox, the vesicles are at first transparent; but the fluid subsequently becomes of a sero-purulent

character. They are never succeeded by the little tubercles, which are left after modified small-pox. The diseases differ, too, in the circumstance of chicken-pox not being capable of being communicated by inoculation, whilst the matter of modified small-pox, inserted under the cuticle of one who has neither been inoculated nor vaccinated, produces genuine small-pox. Mr. Bryce took fluid from the vesicles of true varicella with the greatest care, at all periods of the disease, and at all seasons of the year. He himself inoculated, and saw others inoculate with it, children who had never undergone either small-pox or cow-pox, to the number of thirteen, yet in none of these was this disease, or anything like small-pox ever produced. In one or two cases a slight redness was observed for two or three days; but in all the rest no effect followed. That varicella is distinct from variola and varioloid is sufficiently shown too,—as Professor Alison has remarked—when it attacks a family of which some have been previously vaccinated and others not; and is found to show the same characters in all.

The generality of writers make two forms of chicken-pox, differing from each other in the size of the vesicles—*varicella with small vesicles*, and *varicella with large*. Some admit three divisions according to the shape of the vesicles: 1. *Varicella lentiformis*, in which the vesicles are irregularly circular; flattened at the top; the fluid being liquid at the first, whitish and straw-coloured afterwards. This is the *lenticular chicken-pox*, or *common chicken-pox*. 2. *Varicella coniformis*, in which the vesicles are acuminated, and the fluid pellucid throughout, constituting the *Conoidal chicken-pox*, *Swine-pox*, *Water-pox*, or *Water-jags* of many; and 3, *Varicella globularis*, in which the vesicles are globular and larger; the fluid at first whey-coloured, afterwards yellowish,—the *Hives*. These varieties are, however, sometimes associated, and the fluid in some of them approaches occasionally the purulent character, so as to lead to the disease being mistaken for small-pox, or for modified small-pox.

Chicken-pox—as before remarked—is usually preceded by more or less constitutional disturbance; and, at times, the fever is considerable. The stomach is generally disordered, and, occasionally, the pharyngeal mucous membrane, and that of the air-passages, is more or less inflamed. Commonly, the eruption commences on the second or third day, or even later, and continues to break out in fresh places for several successive days; the febrile symptoms not generally subsiding until it has existed for some days.

**Treatment.**—This is ordinarily very simple. In many cases, the indisposition is so slight, that the patient goes abroad as usual. In scarcely any case is it necessary to do more than inculcate quiet, especially in bed, and the antiphlogistic regimen, which may be aided by occasional mild cathartics.

### III. BULLAR ERUPTIVE FEVERS.

#### I. PEMPHIGUS.

SYNON. *Emphythis pemphigus*, *Febris bullosa*, *Morbus bullosus*, *Febris Pemphigodes*, *Morta*, *Febris vesicularis*, *F. ampullosa*, *Pompholyx*, *Phlyctæna*, *Bulla*, *Hydatis*, *Vesicular fever*, *Bladdery fever*; *Ger.* *Blasenausschlag*, *Brennblasen*.

The concurrent testimony of pathologists is in favour of the two

diseases—as they were formerly considered to be—*Pemphigus* and *Pompholyx*, being one and the same. Both terms are used to signify an affection characterized by an eruption of blebs or bullæ on different regions of the body. *Pemphigus* was generally employed to designate it when the blebs were preceded or accompanied by fever;—*Pompholyx*, when there was no fever, and the eruption had no inflammatory base. The bullæ are generally isolated, and commonly of variable size, but large,—as much as two inches or more in circumference. The fluid, which is at first limpid, becomes gradually reddish, and, ultimately, the bullæ break, and the formation of thin incrustations succeeds.

*Pemphigus* may present itself in two forms—the *acute* and the *chronic*. The *acute form* is met with but rarely; some, indeed, have doubted its existence. M. Schedel affirms, that he has seen several very distinct and severe cases. The premonitory symptoms of acute pemphigus may be simply,—general indisposition with loss of appetite. Sooner or later, roundish red spots or patches appear, on which are blebs, either occupying the whole or a part of the spot. The size of the blebs is various,—from that of a pea to that of a walnut, and even of a much larger body, and several of them may form in groups, so as to occupy an extensive space. Under such circumstances, the epidermis separates over a large extent, and exhibits the skin so much altered, that it appears to have been burnt. At their height, the blebs are distended by a transparent serous fluid; but after they begin to shrivel, the fluid becomes turbid. Most of them burst within the first twenty-four hours, but some do not for several days. The general symptoms may be slight or very serious; but there appears to be no constant ratio between the extent of the eruption, and the intensity of the morbid derangement.

A remarkable variety of acute pemphigus is characterized by the appearance of no more than a single bleb at a time, which is commonly of a large size. This is *Pompholyx solitarius*. The disease does not usually terminate, however, with the formation of one bleb. Within a day or two after the first has disappeared, a second breaks out in some part near it, and this is frequently followed by a third and a fourth, all of which pursue a similar course.

*Chronic pemphigus*—*Pompholyx diutinus*—appears to be a more common form than the acute. It may be either general or partial, and is characterized by a constant succession of bullæ for weeks, so that commonly they are in all stages,—some appearing, and others shrivelling up. Thin, scaly incrustations form over the excoriated parts; and the cutaneous surfaces, which have been the seat of the eruption, are covered with irregular blotches of various sizes. In some cases, the succession of eruptions has been protracted for months and even years.

*Pemphigus* would seem to be conjoined, occasionally, with various other cutaneous diseases, especially with herpetic eruptions and prurigo. Its complication with the last has been described as a distinct species under the name *Pemphigus pruriginosus*, the most remarkable

and distinguishing symptom being the intense itching that accompanies the eruption.

**Causes.**—The causes of pemphigus are generally extremely obscure. The acute form appears to attack all ages, and has often been seen in the newborn. The chronic form would seem to be uncommon in infancy, and to attack elderly people more especially. Some difference of opinion exists as to the greater liability to it of one sex than another. Whilst one, M. Schedel, affirms it to be more rarely seen in females; another, M. Andral, asserts, that females are more subject to it than males. This is, however, a discrepancy of no moment.

The disease occurs in those of debilitated habits, who have been ill fed, and have dwelt in damp situations. Such, at least, is the general opinion, but—as already remarked—its etiology is sufficiently obscure. Some have believed it to be contagious.

**Treatment.**—The acute form of pemphigus commonly requires nothing more than quiet and the antiphlogistic management; and the same treatment is demanded in the chronic form at the commencement. Afterwards, the mineral acids may be conjoined with the use of tepid and alkaline baths; and sleeplessness and irritation may be removed by sedative doses of opium or of its preparations. In all cases, it is important to inquire into the state of the system, and if the disease appears to be kept up by defective nutrition, or by residence in a damp insalubrious locality, the patient must be put upon a better diet, with the use of vegetable and mineral tonics, and remove to a more healthy situation. In long-protracted cases, the arsenical and other preparations, directed under CHRONIC ECZEMA, may be of advantage.

But little local treatment is needed except the baths above directed; emollient applications may prove soothing, after the formation of incrustations; and it has been advised,—should there be considerable local irritation and pain,—that a small puncture should be made with a lancet, and perhaps a light poultice of linseed meal be applied; but it can rarely be necessary to interfere with the eruption: perhaps, indeed, it would be always best to leave it to itself.

#### IV. PUSTULAR ERUPTIVE FEVERS.

##### I. SMALL-POX.

**SYNON.** Variola, Variolæ, *V. veræ*, Euphlogiæ, *Æoleothyma*, *Empyesis variola*, *Pestis variolosa*, *Febbris variolosa*; *Fr.* Variole, Petite vérole, Picote; *Ger.* Echten Blattern, natürliche Blattern, Menschenpocken, Menschenblatternkrankheit.

Small-pox—like measles—is an eruptive fever, propagated by contagion, running a definite course, and, as a general rule,—to which the exceptions are extremely rare,—affecting persons but once in the course of life. Its origin is lost in antiquity. It is said to have been first described by Aaron in the year 622; but the earliest good description of it was given by Rhazes, about the 10th century of the Christian era. It seems to have been first known in some part of Central Asia, whence it was introduced into Africa by the Saracens;

and from Africa into Southern Europe. The common opinion is, that, in these days, it never arises except by contagion; yet there is reason to believe, that under an exceedingly unfrequent catenation of causes, it may be engendered. It must have originated in the first instance from common causes, and it would be strange, if the circumstances that gave rise to it then can never recur. Long dissertations have been written on this disease, which, for so many ages, was the scourge of communities; and which, where it did not prove fatal, left the most unpleasant traces behind it, disfiguring the face of beauty, so that the former traits could be scarcely, if at all, distinguished; but it has become of somewhat less interest since the introduction of inoculation, and *à fortiori* of vaccination; and few opportunities occur for witnessing it in country practice.

The most convenient division of small-pox is into the *distinct*, the *confluent*, and the *modified*. Other divisions have been made by writers, but they are not necessary, and are apt to create embarrassment.

1. *Distinct Small-pox, Variola discreta, Variola discreta benigna, Empyesis variola discreta, Variolæ regulares discretae*.—Before describing the symptoms of distinct small-pox, it may be remarked, that in all the forms and varieties, four stages may be distinguished:—*first*, that of incubation; *secondly*, that of the eruptive fever—the *stadium infectionis, irritationis, opportunitatis, ebullitionis* of some: *thirdly*, that of maturation—the *stadium maturationis et suppurationis*, and *fourthly*, that of decline, desiccation and secondary fever,—the *stadium exciccationis seu desquamationis* of some.

The *stage of incubation* is the period between the reception of the poison into the system, and the commencement of the visible signs of the disease. It is the latent period, and does not differ from that of the other eruptive fevers, which are produced by a specific contagion. Soon after the reception of the miasm, there may be very little indisposition; but, for some days before the eruptive fever, the prodromic or premonitory signs become, at times, marked, and the patient is languid and listless, with more or less disorder occasionally in the digestive functions. The duration of the period of incubation, where the disease is taken “naturally,” varies: the usual time is twelve days, but, according to Dr. Geo. Gregory, it may extend from seven to fourteen. Usually, however, on the eleventh or twelfth day from the reception of the poison into the system, the *eruptive fever* declares itself, and, almost always, by rigors, followed by the train of symptoms which usher in measles, and which do not, therefore, require repetition here. It may be remarked, however, that the signs of great prostration of strength are decided; that the expression of the countenance is anxious; and that in cases where the constitution is delicate, the debility amounts almost to collapse. The period at which the eruption appears is tolerably fixed. Almost always, it is seen at the end of forty-eight hours from the commencement of the eruptive fever, whatever may be the character of the disease,—that is, whether distinct or confluent. This period may be lengthened by weakness of

habit, loss of blood, long-continued vomiting, or extreme cold; but so far as the experience of one—Dr. Geo. Gregory—who has had large opportunities for observation, goes, it is never shortened. The eruption is generally completed over the whole body in one or two days, but it may extend through double this period. Minute pimples, sensibly elevated above the skin, first show themselves on the face and forehead, the nose, the chin and the upper lip: afterwards, they are seen on the neck and wrists; and, subsequently, on the trunk and limbs—the feet being almost always implicated last.

In cases of distinct small-pox, the fever is greatly relieved on the appearance of the eruption.

When the eruption is first seen, the pimples are separated, and surrounded at their base by a red areola; and, when they are numerous, it is difficult to decide whether the disease be small-pox or measles. The difficulty does not continue long, however, for the pustules become more and more elevated, and the true character of the disease is manifest.

The *stage of maturation* of the pustules succeeds to that of the eruptive fever. On the first and second days, the eruption is papular; but, about the third day, the tops become vesicular and transparent; and, on the same or the next day, the pustular character is marked, and suppuration has commenced. The pustules have now acquired some size, and their tops present a flatness, followed by an umbilicated depression. This is perceptible from the third or fourth day, and becomes more marked as the period of maturation approaches. The pustules present a whitish appearance, and are surrounded by a red areola. The umbilicated depressions are readily seen on isolated pustules, but when they coalesce, or are in groups, they are rarely perceptible. On the eighth day from the appearance of the eruption the suppuration is at its height; but as the pustules on different parts of the body did not appear simultaneously, three or four days may elapse before some of them attain maturity. Those on the face and neck generally acquire their full size first, and discharge their contents; next, those on the trunk and upper extremities; and, lastly, those on the feet.

Simultaneously with the appearance of the pustules on the skin, they may be observed on the mucous membrane of the lips, on the tongue, palate, interior of the cheeks, &c.; but it has been questioned by M. Andral, whether they be ever seen lower down, although it has been affirmed by M. Rostan, that dissections have exhibited them throughout the whole tract of the intestines. They are not unfrequently seen on the eye, and the author has met with more than one case, in which loss of sight was occasioned by them; but of the variolous inflammation of the eye he has treated elsewhere.

The seat of the variolous pustule is the cutis vera. Beneath the epidermis, a disc of a consistence like pulp or thick mucus, a pseudo-membranous secretion, exists; and the vesicle containing it is found to be multilocular.

The constitutional symptoms, during the stage of maturation, vary

greatly in intensity, and this usually in a direct ratio with the number of the pustules: when they are very numerous, the fever may be high, and the local irritation considerable. Frequently, there is great tenderness of surface, and itching; the face is often swelled, and the eyes are closed by the tumefaction of the eyelids immediately before the entire maturation of the pustules. Swelling of the hands is often a source of great inconvenience. Ptyalism, also, occurs, at times, to a considerable extent: this has been regarded as salutary; but it is considered by others, to be an inflammatory process, occasioned by the existence of the pustules, and may, according to M. Andral, be attended with disagreeable consequences. Such a case the author has not met with.

On the eighth day from its appearance, the eruption begins to dry up, after the bursting of the pustules; and scabs form, which, under favourable circumstances, fall off in the course of four or five days. This is the *stage of desiccation* or *decline*. By the fourteenth day of the eruption, the fever has generally subsided; the swelling of the face has diminished or disappeared; and the incrustations have fallen off from the face and upper parts of the body; but the surface of the skin especially of that of the face, is left of a reddish brown colour, and where ulceration has occurred, it may be pitted. The discoloration sometimes continues for months, and the pits remain for life.

This is the ordinary course of the distinct form of small-pox.

2. *Confluent small-pox, Variola confluens, Empyesis variola confluens, Variolæ regulares confluentes*.—In this variety of small-pox all the precursory symptoms are more severe; the eruptive fever runs much higher; the regular progress of inflammation is interfered with, by the immense quantity of papulæ, which occupy the skin, and the inflammation extends to the subjacent cellular texture; the mucous surfaces of the mouth, pharynx, larynx and trachea are, also, the seats of the eruption, and it has been seen in the mucous membrane of the rectum; the nervous system is greatly implicated; the fever continues, and even increases in violence after the appearance of the eruption, and its decline is attended with secondary fever, which appears to be the fever of recuperation, and occurs chiefly in cases where the cellular membrane over the body has become extensively involved with the skin in the inflammation.

This form of the disease is characterized by hot and dry skin; white tongue; rapid pulse; sleeplessness, and unquenchable thirst; and is very apt to be complicated with important affections of some part of the economy,—as exanthematous, pustular, and other affections of the skin; superficial abscesses; ophthalmia; encephalic, thoracic or abdominal mischief, &c. &c. Like measles and scarlatina, it is also liable to developé scrofulous and other taints, so that its sequelæ are, at times, most distressing. Throughout the whole period of maturation and desiccation, there is a disagreeable odour from the body, which is characteristic.

Although in many cases the inflammation and irritation of the skin are so violent as to induce great febrile irritation; at other times,

owing most commonly, perhaps, to deficient power in the system, the eruption is imperfectly developed, and instead of filling, and proceeding favourably to maturation, the pustules remain flat, and contain but very little fluid. The accompanying fever is, in many of these cases, markedly adynamic; and certain of them put on all the characters of congestive fever. The strikingly adynamic character of the fever, and the appearance of the skin, indeed, resemble so much petechial typhus, as to render the term *petechial small-pox*, which has been given to this form of the disease, not inappropriate. The pustules themselves fill, at times, with a bloody ichor, so as to give occasion to the term *Variolæ nigrae* sometimes applied to it. The appearance of the pustules has suggested numerous subdivisions of variola by different authors, but they do not seem to be of any practical utility, whilst they cannot fail to embarrass the young inquirer.

It is generally sufficiently easy to diagnose small-pox, except during the first day of the eruption, when it may resemble measles or febrile lichen; a short time, however, is sufficient to remove the uncertainty; and, prior to this its existence may be suspected, from the fact of the person having been exposed to contagion, and his having had measles previously.

Occasionally, during the prevalence of epidemic variola, the constitutional symptoms of the disease appear without the cutaneous eruption. This is termed, by Sydenham, *variolous fever*; and by Mr. E. Wilson, *variola sine variolis*.

MM. Andral and Gavarret analysed the blood in five cases of confluent small-pox. The corpuscles differed but little from the normal standard; but the quantity of fibrin varied considerably, although the increase above the healthy mean was but small. It appeared, too, that the quantity of fibrin increased, although but slightly, by repeated bleeding,—a circumstance, which, according to them, characterizes the phlegmasiæ. This—it has been suggested—may be due to the inflammatory state of the skin in variola; although a similar occurrence is not observed in typhoid fever, in which the mucous surface of the intestine is in a somewhat analogous condition.

The urine varies with the different stages of the disease, and the nature of the accompanying fever. When the inflammatory symptoms, during the eruption, are slight, it hardly differs from the normal state. In the whole of eleven cases observed by M. Becquerel, it retained the inflammatory character during the suppurative stage as long as the febrile symptoms continued; and in three cases, which terminated fatally, it retained the character until the last. In five out of eleven cases, M. Martin Solon found it coagulable.

The danger of the disease depends greatly on the extent of the eruption, and the implication of the mucous membranes. Distinct small-pox very rarely proves fatal; whilst confluent small-pox is full of danger, and destroys, at times, by the supervention of internal mischief, when everything has seemed to be going on favourably. When the mucous membranes, and especially that of the larynx, are much affected, the danger is great; hence, hoarseness, at an early period, is always unfavourable. The appearance of the mouth and throat



will afford some index as to the probable state of the larynx and trachea. A natural tone of voice, according to Dr. Geo. Gregory, is a good omen, even although the eruption be confluent, with a disposition to cellular inflammation.

It need scarcely be said, that where symptoms of typhous prostration exist, with an altered and putrescent condition of the fluids, the prognosis must be unfavourable.

Small-pox is more dangerous to very young and to old persons. It has been affirmed, from the results of observation, that persons above forty years of age rarely recover even from semiconfluent small-pox. The most favourable age would appear to be from the seventh to the fourteenth year, when the powers of life are in full vigour, without the risk of plethora. Plethora is, indeed, as unfavourable as great constitutional debility.

In very severe cases, the fatal event takes place before the eighth day; but more commonly it occurs between the tenth and seventeenth days.

Prior to the introduction of vaccination, according to Dr. George Gregory, the deaths by small-pox were to the total deaths in town and country in the ratio of 16 to 100, or about one-sixth. Of those attacked, the average mortality is usually stated at 1 in 4. This, according to Dr. Stewardson, was the mortality at the Small-pox Hospital of Philadelphia, during the years 1840-41 and 42; a much smaller proportion than in the epidemic of 1823 and 4, described by Drs. J. K. Mitchell and J. Bell, in which more than one-half the unprotected cases died. In an epidemic small-pox, which visited Malta and Gozo in 1830 and 1831, the mortality amongst those not vaccinated was, according to Dr. John Davy, 1 in 4·7. The numerical method has not, however, been extensively and rigorously applied to this subject. The mortality seems to vary in different places: thus, from primary small-pox in London, it has been estimated by Dr. Geo. Gregory, at 36 per cent.; whilst in Germany, according to Heim, it is only 20 per cent.

The following table, drawn up by Alex. Watt, LL. D., of Glasgow, exhibits the proportionate amount of deaths by small-pox, per cent. at different ages in different towns, to the whole deaths by that disease in each town respectively.

	Glasgow.	Edinburgh.	New York.	Philadelphia.
Under 2 years, - - -	57·76	53·24	34·11	34·39
“ 5 “ - - -	85·72	82·68	58·66	57·14
“ 20 “ - - -	95·12	95·23	72·74	77·24
Above 20 “ - - -	4·87	4·76	27·25	22·75

The proportion of deaths by small-pox to the whole amount of deaths by that disease, in New York and Philadelphia, at the same ages, differs greatly, it will be seen, from the proportion of deaths by the same disease in the towns of Great Britain, mentioned in the table.

From accurate statistical accounts, taken by the Registrar-General of England, it would appear, that in 1837 there were only five diseases, more fatal in England, and that the deaths throughout England and Wales amounted to about 12,000 annually. Since then, the number

has fluctuated from 16,268 in 1838 to 9,131 in 1839; 10,434 in 1840; 6,368 in 1841; and 2,715 in 1842.

The following tables, by Dr. Geo. Gregory, taken from the records of the Small-pox Hospital, London, exhibit the comparative mortality in the varieties of regular small-pox, at different ages, during the epidemic of 1838. They farther show the degree of protection, and the diminished mortality after vaccination.

NORMAL SMALL-POX.	UNPROTECTED.		VACCINATED.	
	Admitted.	Died.	Admitted.	Died.
Confluent, - . . .	295	149	56	21
Semi-confluent, - . .	78	8	42	4
Distinct, - . . .	19	0	20	0
Total, normal, - . .	392	157*	118	25

ABNORMAL SMALL-POX.	UNPROTECTED.		VACCINATED.	
	Admitted.	Died.	Admitted.	Died.
Confluent, modified, - . .	2	0	38	4
Semi-confluent, modified,	1	0	28	1
Varicelloid, - . . .	1	0	114	1
Total, abnormal, - . .	4	0	180	6
Grand total, - . . .	396	157	298	31†

Ages.	UNVACCINATED.		VACCINATED.	
	Admitted.	Died.	Admitted.	Died.
Under five years of age, - . .	42	20	0	0
From 5 to 9 inclusive, - . .	37	11	5	0
“ 10 to 14 “ - . . .	30	8	25	0
“ 15 to 19 “ - . . .	104	32	90	6
“ 20 to 24 “ - . . .	115	50	106	16
“ 25 to 30 “ - . . .	45	23	55	8
“ 31 to 35 “ - . . .	12	7	13	1
Above 35 years of age, - . .	11	6	4	0
Total, - . . .	396	157	298	31

At times, during particular epidemic influences, the mortality from small-pox is terrific. Dr. Mackintosh affirms, that he had occasion to attend fifty cases of small-pox, all of which were distinctly traced to the imprudence of a woman, who exposed her unvaccinated child to contagion when visiting a sick friend. Of these fifty patients, thirty-five had gone through the process of vaccination; fifteen had never been vaccinated; they were infants under one year of age. All the protected cases recovered. Of the fifteen unprotected, ten died, and three only of the fifteen had the disease slightly. Of the five children that survived the attack, one did not recover perfectly, and died of chronic bronchitis some months afterwards.

**Causes.**—It has been already remarked, that the mode of propagation of small-pox is by contagion. The sporadic origin, if it ever occur, must unquestionably be rare. The disease may be communicated to one who is unprotected—that is, who has never had it in the natural way, or by inoculation, or who has not been vaccinated. It may be

\* Of these there died of fever and superadded erysipelas, 14.

† Of these there died of fever and superadded disease, 10.

induced by a miasm diffused in the air, or by positive contact of the variolous matter; or by inserting it under the cutis—in other words by *inoculation*. It has been affirmed by Drs. Heberden, Haygarth and Andral, that the contagious character is developed during the suppuration of the pustules, and is preserved until their desiccation; and that the disease is not communicable during the eruptive fever, and the two or three succeeding days; but experience appears to have shown the inaccuracy of this opinion, and that there is no safety after the manifest appearance of the disease. The scabs retain the contagious power for a considerable time; and it is asserted by Drs. Geo. Gregory and Hawkins, that a case of confluent small-pox will taint the air and spread the disease for at least ten or twelve days after death. The contagious miasms can attach themselves to clothing; and if air be excluded from these fomites, they may communicate the disease for a long period afterwards. Such is the view generally entertained, and it is probable. There can be no doubt, however, that a free ventilation will prevent this; for the author has never met with a case, in which the practitioner has been the agent of conveying the disease from one house to another.

The circumstances, that give occasion to an attack of confluent small-pox in one person, and of the distinct kind in another, from exposure to the same contagion, are totally unknown. Certain it is, that the same matter will produce both forms in different individuals; nor would it seem, that the matter of the confluent pustule is more likely to induce the confluent form than that obtained from the distinct pustule. The form of the disease appears to depend upon constitutional differences, that are inappreciable.

Like other contagious diseases, this is epidemico-contagious. In other words, it does not rage at all times alike. Before inoculation or vaccination was introduced, it visited epidemically the same region after uncertain periods; and one of the strong objections urged against inoculation was the fact, that as natural small-pox could be communicated from the inoculated, the introduction of inoculation kept the disease always in a community, and that hence the mortality from small-pox was absolutely increased after the introduction of inoculation, although the ratio of deaths in those attacked was diminished. The greatest epidemics in recent times, in England, according to Dr. Geo. Gregory, have been in 1781, 1796, 1825, and 1838.

Season and climate are devoid of influence over it. It attacks both sexes, and all ages. Judging from the mortality, it is less exclusively than measles or scarlatina a disease of early life; for in Philadelphia, during the ten years preceding 1845, of 844 deaths which took place from it, 257 were in individuals over 15 years of age. Like measles, it may affect the fœtus in utero. The cases of this kind on record are very numerous. In many of them the mother was unaffected.

All persons are not equally susceptible; and the susceptibility appears to vary at different periods of existence. A physician may, for example, pass through a long life attending many cases of it with impunity, and yet may, ultimately, take the disease naturally or by inoculation. It rarely affects the same persons more than once; so

rarely, that the proportion has been estimated at not more than 1 in 50,000; but this—it need scarcely be said—is not founded on any accurate computation. When it does occur a second time, it is generally after a long interval. Where the system is protected, local inconvenience sometimes arises from the application of the small-pox matter or miasm, but the disease does not develop itself.

**Pathological Characters.**—When a small-pox pustule is examined at an early period, the epidermis is found to have preserved its natural thickness; it readily separates, and exposes a false membrane of a dull white colour, somewhat firm, slightly friable, and having the appearance of a truncated cone, depressed at its centre. This disk adheres more to the epidermis than to the derma. Beneath the pseudo-membranous production, the derma is finely injected or ecchymosed. When the pustules are examined at a more advanced stage, they are found to contain yellowish consistent pus. Their umbilicated shape has been ascribed to a cellular filament extending from the epidermis to the derma; whilst others have considered it to be owing to traction exerted on the epidermis by the excretory ducts of the cutaneous glands. According to M. Grisolle, however, the umbilication is owing to the shape of the disk.

The appearances of greatest moment observed on dissection are in the air-passages. Pustules have been seen as low down as the bifurcation of the bronchia; with unequivocal evidences of high vascular excitement in the mucous membrane generally. It appears engorged with blood, and covered with a copious viscid, purulent, or puriform secretion, of a gray or brownish colour; and, on detaching this, the membrane itself seems thick and pulpy, and, in the worst cases, black or sloughy. In an early stage of the disease, the epithelium exhibits a number of dim spots of a round form and of the size of lentils, produced by the exudation of a fluid between it and the layer of the mucous membrane beneath. In the further progress of the disease, the effusion becomes more copious and raises the epithelium, which may then be stripped off, exposing the inflamed and sometimes ulcerated derma.

Generally, evidences of pleuritic inflammation, followed by effusion, are found on one side,—rarely on both sides. Where convulsions or coma have preceded death, there may be morbid appearances in the encephalon or its meninges, as in other diseases attended with these phenomena. In the œsophagus, minute elevations, which have been regarded as pocks, have been found on those who have died before the 12th or 13th day. Small, round, ulcerated spots have, likewise, been observed in the mucous membrane of the intestines, which by some have been regarded as variolous pustules,—by others, as ulcerated follicles, similar to what are found in typhoid fever. These appearances are, however, rare; and the freedom of the abdominal viscera from urgent symptoms during life, and from all trace of disorganization after death, is stated by Dr. George Gregory as a remarkable feature in the disease.

It would appear to be necessary, that there should be contact of air or light with the mucous membrane, in order that pustules may be fully developed; hence, if the rectum be prolapsed during the stage

of maturation, pustules may be witnessed upon it. It can be understood, however, that pustules are not likely to be discovered in the deeper-seated mucous membranes, except when the patient dies at the commencement of the suppurative stage. At a later period, the thelium covering them is ruptured, and they subside.

**Treatment.**—In the distinct form of small-pox, not much treatment is generally needed. It is sufficient to adopt the antiphlogistic regimen; to have the chamber well ventilated, and to administer, once or twice a week, a cathartic. Whilst the surface of the body is in such a state of erethism, the mucous membranes can scarcely fail to participate in some measure; and, therefore, a cathartic may prove serviceable by removing morbid secretions.

In every form of small-pox, it must be borne in mind, that the disease has a tendency to run a definite course, so that if all goes on favourably, the danger will be over in the course of a certain period; but it must be equally borne in mind, that the extent of the eruption may give rise to intense phlegmasia of the skin, and to high arterial excitement; that, in other cases, the powers may be oppressed or depressed; and that, in others again, some important internal organ may be attacked with active hyperæmia, and an unfortunate termination be the consequence.

At one time, in this as in other fevers, it was believed, that heat was necessary for the due maturation or concoction of the pustules, and hence the heating regimen and the excitant medication were carried to an extent, that added fearfully to the mortality. "The object of the physician in modern times,"—as Dr. Geo. Gregory has well remarked,—“has less of pomp, but more of true philosophy about it. He is content if he can keep within due bounds the action on the surface; if he can check the congestions and inflammations, which occasionally supervene in internal parts; and, lastly, if he can support the system under protracted fever, and the exhaustion consequent on extensive pustulation.” In the initiatory or eruptive fever, the treatment has to be essentially the same as in the same stage of measles, or as in any inflammatory attack of fever. Cathartics, cold drinks, the free admission of cool air; and, if the arterial excitement be high, or there be signs of engorgement of some internal organ—as indicated by intense headache and perhaps delirium; oppressed breathing; great irritability of the stomach, with pain upon pressure; which last symptom has been regarded by some to be a characteristic of small-pox—blood may be taken from the arm; or should this not be considered advisable, leeches may be applied to the temples, if the encephalon be greatly affected;—to the chest, if the air-passages; and to the abdomen, if the abdominal viscera be seriously implicated.

The stage of maturation is a necessary part of the disease, but many agencies may be adopted in the way of palliation. Should the pustules not fill in a satisfactory manner, the cause must be investigated; and if it appear to be owing to a concentration of vital activity towards some internal organ, even should the pulse be small, it may be advisable to adopt the course deemed appropriate in congestive fever,—that is to take away a small quantity of blood from the arm, or by

means of leeches; to apply bottles filled with hot water, and a bladder half filled with the same, to the epigastrium, and to administer with great caution, should it appear to be needed, wine whey.

When there is much pain in the throat, and difficulty of swallowing, a few leeches may be applied, and afterwards a warm emollient poultice. Throughout this stage, it may be advisable to administer cooling, but not irritating cathartics,—as senna and salts,<sup>a</sup> castor oil, &c., with the effervescing draught, and the ordinary refrigerant drinks recommended in fever. Great attention must likewise be paid to the super-vention of visceral inflammation, and to meet it by appropriate dete-cting and revellent agencies.

<sup>a</sup> R.—Infus. sennæ fʒijj.

Magnes. sulphat. ʒijj.—M.

Dose, one half, to be repeated, if necessary.

Where the symptoms are associated with a putrescent condition of the fluids, and the ordinary signs of petechial fever, the treatment must be that advised under typhus. It is, indeed, impossible to point out all the modifications of management, that may be demanded according to the precise complication. A knowledge of general principles will suggest the appropriate remedies.

It is an ancient recommendation to puncture the pustules, so as to let out the contained humour, and prevent—it is conceived—the absorption of the pus; but it has not been found advantageous: more recently, it has been advised to cauterize the pustules within the first two or three days, or even somewhat later, with the view of abridging their duration, and preventing pitting. The best mode of applying the caustic is to cut it to a fine point, and pierce the centre of each pustule with it. Mercurial plasters, composed of calomel or corrosive sublimate, are said to have the power, when applied to the skin, of so modifying its condition as to prevent the maturation of the pustules; and wetting the face frequently with spirit of hartshorn is said by Dr. Morton of Philadelphia to have kept down the inflammation, and prevented the pustules from becoming either large or irritable.

Keeping the patient with his face covered with a linen mask smeared on the inner surface with mercurial ointment, is said to have prevented pitting, and these results have been confirmed in this city. In every case in which Dr. Stewardson applied the mercurial ointment before the fifth day of the eruption, the pustules, whether on the face or limbs, to which the application was made, aborted. In one case, he applied the mercurial ointment to one half the face only: the pustules on this half aborted, and left no marks; those on the other half ran their regular course, and left marks. The same happened in another case, when one half the face was covered with mercurial, and the other with simple, ointment. From all his observations he infers, that the use of the mercurial ointment is decidedly beneficial, when early resorted to, in cases where the eruption is abundant; not merely in lessening the liability to cicatrices, but in diminishing the swelling, and preventing the formation of thick crusts; yet Baron Larrey affirms, that he has found nearly the same benefit to follow the repeated anointing of the patient's face with almond oil.

The treatment of small-pox by the "ectrotic method"—as it has been termed—has received great attention of late, and, in addition to the plans already mentioned, it has been proposed to pass over the eruption a pencil dipped in tincture of iodine or in a solution of nitrate of silver, in the proportion of from 15 to 45 grains to the ounce of distilled water. It would appear to be necessary, that the plan should be adopted before the fourth day, or before the eruption assumes the pustular form. Dr. Crawford, of Montreal, prefers iodine to the salt of silver. He found it "very manageable and very bearable." Dr. Jackson, of Philadelphia, formerly of Northumberland, Pennsylvania, applied it to one arm of a child, eleven months old, in confluent small-pox, on the third day of the eruption, and to the arm which appeared the worst, rubbing it freely on with a sponge three times that day, and twice the next. On the 11th day, when the pocks over the whole body were at their height, elevated, with hard bases,—those on the arm to which the iodine had been applied, were entirely flat, with their purulent matter under the dead cuticle, without any swelling of the part. The abortion, at the time, was considered to be complete; but some very slight pits were to be seen afterwards: they were, however, very inconsiderable, compared with those on the other arm. Dr. Jackson is of opinion, that no fair trial of its ectrotic powers in variola can be had without applying it on the first day of the eruption, and continuing it for several days,—say five or six. The good effects of the tincture of iodine in this respect have been deposed to by others. (*New Remedies*, 5th edit. p. 402, Philad. 1846.) Frictions with sulphur ointment, made of from a drachm and a half to two drachms to an ounce of lard,—the first proportion for varioloid; the second for cases of confluent small-pox,—over the face and the other parts that are covered with pustules, have been followed by equally favourable results, and M. Piorry has recently strongly recommended the application of a blister. Light has certainly an effect in favouring the development of the pustules: hence the patient has been kept with advantage in a dark room. In a discussion, which took place at the *Académie Royale des Sciences*, of Paris, in July, 1842, M. Serres stated, that he had made numerous experiments by covering the pustules with small glass cups; and he observed, that they were developed, modified in their progress, or completely arrested, according to the greater or less transparency of the glass. With the view of preventing the contact of light, the face has been masked with advantage; and, according to Baron Larrey, the Egyptians and Arabians are accustomed to cover the exposed parts of the body—as the face, hands, and feet—with gold leaf, as soon as the eruption makes its appearance.

When the eruption begins to dry off, and the complaint to decline, little is needed in the distinct form: the patient may have recourse to the warm bath with advantage, to remove the incrustations, and to cleanse the surface.

The secondary fever, which occurs in the confluent form, requires prudent management. If active, the refrigerant and general antiphlogistic treatment may be necessary; if, on the other hand, adynamic

symptoms be prominent, the powers may have to be supported as in typhus fever.

In the different sequelæ of the disease,—erysipelas, variolous ophthalmia, variolous pleurisy, &c., the affection must be treated on general principles,—bearing in mind that the system has just passed through a severe shock; and should scrophulous or other *vices* be developed, it will be important, if practicable, to alter all the physical and moral influences that surround the patient, by change of air, the good effects of which—as has often been remarked—are more signally displayed in the sequelæ of small-pox than in any other known disease.

3. *Modified small-pox, Small-pox after Inoculation or Vaccination, Varioloid, Variolois, Varioloïdes, Variolides, Variola modificata, V. mitigata, V. vaccinatorum, Varicella varioloïdea*; Ger. *Mittelpocken, modificirten, gemilderten Pocken, Varioloiden*. The most important circumstances that modify the course of small-pox are,—the effect produced upon the system, either by inoculation with variolous matter, or vaccination. When small-pox occurs, after a lapse of time, in a person who has either been inoculated or vaccinated, it is generally much milder than usual, and its course is materially interfered with. It would not seem, however, to be even a general rule, that a previous attack of small-pox renders the subsequent attack slighter. The author has known two fatal cases of secondary small-pox, and it has often been remarked, that secondary cases are generally very severe.

It was not until the commencement of the last century, that inoculation for the small-pox was introduced into England from Turkey. Where it was first practised is unknown. In April, 1721, the daughter of Lady Mary Wortley Montagu was inoculated, being the first case in England; and in June, 1721, it is said to have been practised in this country by Dr. Boylston.

The operation is performed by introducing a portion of variolous matter by means of the point of a lancet under the cuticle; and the region of the insertion of the deltoid muscle is generally chosen for this purpose, because it is convenient; and because it is a part of the arm of the female, which is never likely to be exposed by the mutations of fashion. On the eighth day from inoculation, generally, evident signs of the eruptive fever occur. At this time, the inoculated part has passed through the papular and vesicular stages, and has become a hard and inflamed phlegmon. After the appearance of the febrile symptoms, the inflammation of the arm spreads rapidly; an areola of irregular shape appears, in which minute confluent vesicles may be traced; and on the eighth or ninth day, spots of variolous eruption appear in various, and often in the most distant, parts of the body. The severe confluent form does not often occur; yet on the only occasion in which the author communicated the disease by inoculation such was the case, and it terminated fatally.

The disease proceeds through its course, in the same manner, and requires the same management as natural small-pox.

The fact, that deaths do occasionally occur from *variola inserta* or “inoculated small-pox,” and that it is as communicable as the natural,



was calculated to diminish the sphere of usefulness of inoculation, and to cause the discovery of Jenner to be hailed as one of the greatest blessings that had ever befallen the human family.

It was a common belief in Gloucestershire, where Jenner resided, that the cows were affected with a disease—"cow-pox"—which afforded security against small-pox. He determined to put this to the test of experiment, and, by inoculating with the matter of cow-pox those who had never been affected with small-pox, to discover, whether it afforded the desired protection. His experiments were crowned with entire success, and all nations now hail Jenner as one of their most illustrious benefactors. Of the nature of vaccina or cow-pox, and the mode of communicating the disease, we shall have to treat at length under another head.

At one time, it was believed, that vaccination is a complete preventive of small-pox; that if universally practised, it would exterminate that loathsome disease, and diminish the general mortality full 9 per cent.; and, in the height of the enthusiasm occasioned by Jenner's immortal discovery, none of the cases of apparent small-pox were regarded as the real disease, but something resembling it:—hence the term *varioid*, or "small-pox like." Even at the present day, there are some who regard the numerous cases of small-pox after vaccination as nothing more than chicken-pox, in spite of the evidence, that inoculation with the matter of the varioid pustule will as certainly produce small-pox in one who is unprotected, as that from the variolous pustule; and that a miasm is given off from the body of one labouring under varioid, which can induce natural small-pox under the same circumstances.

In persons who have been partially protected from an attack of small-pox by vaccination, varioid presents itself generally with all the symptoms of a mild attack of variola. The fever is rarely considerable, although, at times, it is as high as in the unmodified disease; but it does not usually continue after the appearance of the eruption. The pustules generally arrive at their height in five or six days, and their appearance is not uncommonly modified,—filling rapidly, in some cases, with a turbid or milky fluid, and drying up, or exhibiting signs of desquamation by the fourth or fifth day. Doubtless, the varying character of the eruption, and the shortened duration of the disease, first gave the impression, that it was varicella or chicken-pox, which, as elsewhere shown, varies very materially in the phenomena it presents. In other cases, no difference is perceptible between the phenomena of varioid and of natural variola. The pustules are large, distinctly umbilicated; the initiatory fever is violent; and the disease is scarcely modified, except in its duration, which is usually somewhat less. The analysis of the blood in two cases, by MM. Andral and Gavarret, gave the following results:

	Water.	Fibrin.	Corpuscles.	Residue of serum.
	785.6	2.3	120.3	91.8
	782.1	2.4	125.8	89.7
Healthy blood, . . .	790.0	3.0	127.0	80.0

In the first case, the bleeding was performed on the third day; and in the second, on the second day of the eruption.

Confluent cases, as before remarked, occur, and, although pitting is not common, it may, nevertheless, happen. The tables, too, which were cited before, as the recorded experience of the Small-pox Hospital in London, exhibit, that it may prove fatal. The ratio of mortality, according to Drs. Geo. Gregory and Heim, is the same in London and in Germany, that is, 7 per cent.; but in France, it would appear to be much less than this: thus—according to the report of M. Villeneuve—of 365 cases of confirmed small-pox, occurring in persons who had been at some previous period successfully vaccinated, there were only 8 that proved fatal—giving a proportion of about 1 in 45 or 46; and more recently, M. Gauthier de Claubry infers, that varioloid destroys 1 in 100; whilst the mortality from small-pox is 1 in 8·5. The author has never, in his own experience, met with an unfortunate case; but he has seen numbers in which the face was scarred. Except in these very severe cases, secondary fever is unusual.

Such are the main characters of small-pox after vaccination. Where the disease occurs after genuine small-pox, the characters are much the same. Frequently, however, as before remarked, secondary small-pox is extremely severe. It has been affirmed by M. Serres, from an observation of between 1700 and 1800 cases of small-pox in his private practice and in the hospitals, that cases of a second attack of small-pox were as numerous in proportion as of attacks of small-pox after vaccination. On these points much valuable information has been recently collected by Dr. Stark, of Edinburgh, from which it appears, that Dr. Crosse, of Norwich, reported, that of 603 cases of small-pox, seen by him in that town in the course of his practice, no fewer than 297 previously had small-pox, whilst only 91 had been previously vaccinated. The Vaccine Section of the Provincial Medical and Surgical Association state, that their correspondents relate the occurrence of no fewer than 239 cases of small-pox after small-pox, of which 12 or 13 died. The following table, by Dr. Stark, leads to important inferences:

*Comparative mortality of small-pox after small-pox, and of small-pox after vaccination.*

Authorities.	Small-pox after Small-pox.			Small-pox after Vaccination.		
	No. of Cases.	Deaths.	Ratio of deaths to 100 cases.	No. of Cases.	Deaths.	Ratio of deaths to 100 cases.
Thomson, Edinburgh,	71	3	4·2	310	1	0·3
Chelsea Military Asylum,	26	3	11·5	24	0	0·0
Heim, Würtemberg,	39	14	35·8	147	42	28·5
Bousquet, Marseilles,	20	4	20·0	2000	20	1·0
Gregory, London,	9	2	22·2	789	46	5·8
Total.	165	26	15·7	3270	109	3·3

It thus appears, that whilst they, who take small-pox a second time,

die in the proportion of 15·7 in the 100; they who take small-pox after vaccination die only in the proportion of 3·3 in the 100;—a proportion, as Dr. Stark observes, absolutely lower than the mortality of almost any other—even the mildest—disease.

**Treatment.**—The medical management of varioloid does not differ from that of variola. Being usually mild, a simple antiphlogistic treatment is generally all that is demanded. The severer cases require the adaptation of the remedies advised under Small-pox.

## 2. cow-pox.

SYNON. *Vaccinia*, *Emphlysis vaccinia*, *Vacciola*, *Variolæ vaccinae*, *Variolæ vaccinicæ*, *Variolæ tutoriæ*; *Fr.* *Vaccine*; *Gre.* *Kuhpocken*, *Schutzpocken*, *Schutzblattern*.

The cow is liable to a disease called "*cow-pox*," and, as before remarked, it had been a common observation, in the dairy counties of England, that persons whose occupation it was to milk cows affected with this disease were protected against the small-pox. This notion was laid hold of by Jenner, who inoculated persons with the matter of cow-pox, and found that they were unsusceptible of small-pox, even when variolous matter was inserted by inoculation. He was for nearly twenty years engaged in testing this deeply interesting and important question; and, finally, in 1798, put forth the results in his "*Inquiry into the Causes and Effects of Variolæ Vaccinæ*." The first satisfactory experiment appears to have been made on the 14th of May, 1796, when a child, eight years of age, was vaccinated by Jenner with vaccine matter taken from the hands of a milker. In the year 1799, vaccination was commenced in this country, and confidence was so rapidly attained in its prophylactic powers, that it extended to every part of the earth, and, for the time, seemed to Jenner and to others, to be so complete a preventive of small-pox, that it but required that vaccination should be practised universally, to exterminate that loathsome disease altogether. The result has proved that, valuable as was the discovery, and beneficial as were the effects of vaccination, the idea of extirpating small-pox from the list of human maladies was illusory. Within the last twenty-five years, indeed, so many cases of modified small-pox or varioloid have occurred in different countries as to occasion serious inquiries, whether the protective power of vaccination may not be exhausted after a certain time, and revaccination be rendered necessary; or, again, whether the matter, transferred from one individual to another, in countless succession, may not become deteriorated, so as to render a recourse to the cow advisable. Of late years, both plans have been adopted.

Cow-pox—the term is now used to signify the disease as induced in the human subject—passes through its regular stages as follows:—On the third day from the insertion of the virus, the puncture appears red and elevated, so as to be distinctly felt by the finger passed over the surface. On the fifth, the elevation is found to be a pearl-coloured vesicle, containing a very small quantity of a thin and perfectly transparent fluid. On the eighth day, the vesicle is in its greatest perfection, umbilicated at the top, and its margin tense and elevated above the surrounding skin. When closely examined, the structure of the vesicle

is found to be cellular, the cells being from ten to fourteen in number, and the specific matter being secreted from the base. On the evening of the eighth day, or morning of the ninth, usually an areola forms at the base of the vesicle. This is circular; the skin becomes tense, red, and painful for a considerable extent around, and the lymphatic ganglions in the axilla swell. At times, the cellular membrane participates in the inflammation, and sloughing takes place; but this is not common. The urine varies with the accompanying fever. If the latter be synochal, the urine has the characters of that of inflammation. If the fever be slight, the urine may be normal. The areola continues forming during the ninth and tenth days, and, on the eleventh, it begins to fade. A scab forms on the vesicle or pustule,—for the eruption has been esteemed to belong rather to pustules than vesicles, inasmuch as it is filled with a kind of coagulable lymph, is umbilicated or cupped in its centre, and, at no time anterior to that at which it becomes filled with yellow pus, can the fluid be at once discharged of its contents by a puncture like a vesicle. The scab is of a circular shape, and of a brown or mahogany colour, which hardens gradually, blackens, and, finally, about the end of the third week, drops off, leaving a scar, which is characteristic. When perfect, this scar, according to Dr. Gregory, should be of small size, circular, and marked with radiations and indentations. At the time when the pustule has reached its height—or about the eighth or ninth day—slight febrile excitement is sometimes perceptible; but frequently there is no evidence of this, and yet the protection may be ample. Such are the phenomena attendant upon regular cow-pox. At times, however, a spurious affection—*vaccinella*—of which there are many varieties, supervenes on vaccination. Occasionally, the vesicle, at an early period, becomes red and itchy, and a small acuminated pustule forms, which is early surrounded by an irregular areola. The fluid is never clear, like that of genuine cow-pox. This is one of the most common and most unsatisfactory results of vaccination, and should never be relied on.

At times, the inserted virus remains for a while latent. No appearances of development exist for a week or longer, after which the vesicle goes through its regular states, and affords entire immunity.

Whenever it can be effected, the lymph should be taken in a fluid state, and transferred from arm to arm: where this is impracticable, it may be taken on the points of quills, or between pieces of glass; but, in this country, the common method is to vaccinate from the scab, which, if enclosed in wax, will retain its virtues for a long period. The matter should be taken, by preference, before the formation of the areola: the general opinion, at least, is, that it is more active prior to that period; and yet, as has been remarked, the inspissated fluid forming the scab is, with us, most commonly used.

As to the relation between cow-pox and small-pox, different views have been entertained. Perhaps Jenner's idea may have been correct,—that the two affections are of identical nature, and that vaccination is only a milder form of inoculated small-pox. Experiments by Messrs. Ceely, Thiele and others, seem to have shown, that the cow may be inoculated with the matter of small-pox, and that in passing

through the body of the animal the matter is converted from small-pox into vaccine. Dr. Geo. Gregory, however, strongly opposes this view, and considers that "vaccination is not small-pox, but just the reverse—the antagonist principle." "Jenner"—he adds—"set us all so wrong by his term *variola vaccinae*, that it is really difficult to get out of the false (because so well-beaten) track. If he had wanted a short, expressive term, it should have been *vaccinia antivariolosa*. We should then have set ourselves to study how far the antivariolous power extended, and by what laws it is limited."

It was at one time believed, that the disease in the cow is produced by the matter of grease, which affects the foot of the horse, and is conveyed by the hands of the farm servants who are the milkers; but this is not established; and it has been denied, that the grease-pock and the cow-pock are identical.

It was before remarked, that time—it has been imagined—may have the effect of diminishing the amount of protection afforded by vaccination. In the table, given elsewhere from Dr. George Gregory, of the cases of small-pox admitted into the Small-pox Hospital of London, in the epidemic of 1838,—of 298 cases that had been previously vaccinated, none presented themselves under five years of age; 5 between 5 and 9 inclusive; 25 between 10 and 14; 90 between 15 and 19; 106 between 20 and 24; 55 between 25 and 30; 13 between 31 and 35; and 4 above 35 years of age; and more recently, he has stated as worthy of record, that among 120 cases of variola occurring subsequent to vaccination at the small-pox hospital in 1840, 11 only were under 16 years of age. The youngest person admitted under such circumstances was aged 7; and the first occasion on which he had ever known a child under five years of age admitted with small-pox after vaccination, occurred the week before he wrote. These facts would seem to encourage the view, that after a certain time, the protective power of vaccination is greatly diminished; yet it will be observed, that after the age of thirty-five, again, the subsequent occurrence of variola is extremely uncommon. Moreover, the view is not borne out by other evidence. In an able paper by Dr. Stark on the cause of the continued prevalence and fatality of small-pox, contained in the Edinburgh Medical and Surgical Journal for July, 1845, it is affirmed, that not only is small-pox rare in the adult over Britain generally, but the chief cases occur among children under five years of age, in the very class, which—as he properly observes—according to any supposition, ought, if *vaccinated*, to be the most perfectly protected. Thus, in the Registrar-General's Report of the mortality of England and Wales for the year 1838, it is stated, that the ages of 8706 persons, who died of small-pox, were obtained, and it was found that no fewer than 7575 were under five years of age, and only 1131 above that age. It appears, also, from the statistical inquiries of Dr. Watts, that in 1839, in Manchester, 89.341 per cent. of those who died of small-pox were under five years of age; in Liverpool, 85.328 per cent.; in Edinburgh, 82.683 per cent.; in Glasgow, 85.729 per cent.; in Perth, 87.755 per cent.; and in Dundee, 85.258 per cent. According, too, to the census of Ireland for 1841, in the 10 years ending the 6th of June of that

year, 58,006 deaths had occurred from small-pox; and of these 49,038 were in children under five years of age, and only 8,968 in those above it:—facts which certainly prove, approximately,—as Dr. Stark maintains,—that the protective power of the vaccine virus does not wear out of the constitution in ten or twenty years, otherwise the great mortality would not be amongst children. He thinks the mortality amongst them is better explained by their never having been vaccinated, and, therefore, being unprotected.

To guard against the presumed loss of protective power, it has been extensively urged, that revaccination should be practised; but, on this point, there has been a difference of sentiment,—some regarding it as unnecessary. The fact, however, that the true vaccine disease can be reproduced in one who has previously had it, is strongly in favour of the course. Extensive experiments have been made as to the effects of revaccination in Germany, where vaccination has been enforced to an extent which is not practicable in freer governments. At the time, when the revaccinations published by Dr. Heim were practised, the population of Würtemberg was 1,363,298; and it appears, that during the period of five years, 208,322 children were vaccinated, leaving only the insignificant number of 271, above three years of age, still unvaccinated. The total number of cases of small-pox that occurred during the same period, was 1677, of which 354 were cases of genuine small-pox, and 1043 modified or rendered milder by previous vaccination,—being about one case of failure in every 217 persons. The total number of persons vaccinated a second time, after the lapse of a certain number of years, was 44,009; of this number upwards of 20,000 took the disease perfectly; 9,006 imperfectly, and 15,000 not at all. It might be inferred from this, that little more than one-third of those vaccinated in infancy could be regarded as protected from small-pox; but although probable, it is not proved, that a susceptibility for cow-pox is the same thing as a susceptibility for small-pox; for, if this be admitted, it would seem to follow, that the proportion of persons liable to a second attack of small-pox must be greater than is commonly believed. Thus it appears, that of 297 persons who had previously had small-pox and were pitted, 95 received the cow-pox in a perfect form, and 76 in a modified form, whilst 126 resisted it altogether. The results of revaccination in the Hanoverian army, in the years 1837–8–9, according to Mühry, were similar. Of 112 pitted with small-pox, 16 received complete revaccination, 21 incomplete, and 75 none at all; in other words, the susceptibility of revaccination existed in no less a degree than in those who had been vaccinated. On the other hand, it appeared, that after varioloid scarcely any were susceptible of revaccination; for of 34 who were subjected to the operation, one only showed any result, and that was imperfect.

It resulted from the Würtemberg experiments, that the proportion of persons who took the cow-pox well, on the second vaccination, progressively increased with the distance of time from the first vaccination. Thus, in some of the departments of the kingdom, where the revaccinated were chiefly children, the proportion of cases in which the operation succeeded was comparatively small: among the military,

14,344 in number, where the subjects were nearly all about the age of twenty-one, a much greater number received the disease; whilst in a whole department, in which the persons revaccinated were thirty years old or upwards, a still larger proportion was affected. All these results bear strongly on the expediency of a second vaccination: they have been urged, indeed, as rendering revaccination absolutely necessary for the protection of the public, and it must be admitted that much of the experience we have had tends decidedly to countenance this view; besides a strong argument in its favour is, that it may be productive of benefit, whilst no harm can possibly result from it.

One very important fact would seem to be fully established,—that the existence of a cicatrix or mark of the primary vaccination in the arm is no test whatever of the immunity of the individual from small-pox,—it having been found in Würtemberg and Hanover, (*Heim* and *Mühry*.) that those with, and those without, the mark, were equally susceptible of cow-pox on the second trial. Thus, of the 14,344 revaccinations among the military in Würtemberg, 8,845, or more than half, showed what are usually considered good marks of previous vaccination; and, of this number, the success of revaccination was complete in 31 per cent.; modified in 29 per cent.; and it failed altogether in 40 per cent.; whilst of those of imperfect marks, the revaccination was complete in 28 per cent.; modified in 26 per cent.; and total failure occurred in 46 per cent. In the year 1840, there were vaccinated in all the regiments of the Prussian army, 43,522 persons. On these, the cicatrices from previous vaccinations were distinct in 34,573; indistinct in 6177; not discernible in 2772. The pustules produced by the vaccinations were regular in their course in 20,952; irregular in 8820; and no effect was perceptible in 13,750. The unsuccessful vaccinations were repeated successfully in 2831 cases; unsuccessfully in 8958; and the number of genuine pustules produced was from 1 to 5 in 10,021 cases; 6 to 10 in 5875; 11 to 20 in 4171; and 21 to 30 in 885. Of all the revaccinations, 48 per cent. were successful—the proportions varying between 40 per cent. and 60 per cent. in different regiments, (*Lohmeyer*.) In 1841 the proportion was 52 per cent. It is difficult to account for this difference, as well as for that observed in different countries. In the Hanoverian army, the proportion of perfectly successful cases is stated to have amounted to upwards of  $\frac{1}{10}$ ; in the Prussian army, as just remarked, to nearly  $\frac{1}{2}$ ; in Würtemberg, in the army, to about  $\frac{1}{3}$ ; and among civilians to nearly  $\frac{1}{2}$ . The proportion of imperfectly successful cases was, on the contrary, greatest in the Hanoverian army: in it, it was more than  $\frac{1}{3}$ ; in the Prussian army,  $\frac{1}{6}$ ; in the Würtemberg army, less than  $\frac{1}{4}$ ; and in the people,  $\frac{1}{5}$ ; but taking the successful and imperfectly successful cases together, the results were nearly the same in all. (*Mühry*.)

Results, similar to the above, have been obtained elsewhere. Small-pox and varioloid having been unusually prevalent in Philadelphia during the spring of 1840; the then physician of the House of Refuge, and of the Pennsylvania Institution for the Instruction of the Blind, Dr. T. S. Kirkbride, was induced to revaccinate the inmates of those institutions. 209 children were revac-

cinated. In all, a perfectly formed, rounded, stellated, or punctuated cicatrix was found. All others, on whom this indication of previous vaccination was not discovered, were excluded from the report. Of the total number, 134 were boys, and 75 girls;—the average age was 12,—the extremes being 6 and 20. The dry vaccine scab was used in every instance to communicate the disease. Of the 209 children with perfect cicatrices, 44, or rather more than 21 per cent. had the disease perfectly. The results of revaccination in France give even a less proportion than this. Of 2,199 cases, in which according to M. Villeneuve, it was performed on persons of different ages and sexes, who had been successfully vaccinated at some previous period of their lives, the operation took effect in 223 cases only,—which would give the proportion of about 1 to 13 or 14.

After all, perhaps, as Dr. Stark has endeavoured, and successfully, to demonstrate, the continued prevalence and fatality of small-pox is greatly owing to the neglect of vaccination. The following table, drawn up by him, exhibits the great proportion of those who must be unprotected, and on whom the mortality almost wholly falls.

*Proportion of Population vaccinated in different countries.*

Countries.	Authorities.	Proportions of vaccinations to 100 of population.
Great Britain and Ireland,	Statistics of Recruiting,	73.0
Chelsea (England,)	Marshall,	30.6
Edinburgh (Scotland,)	Stark,	47.5
Austria, 1833,	Austrian Government Reports,	67.5
France, 1806-26,	Villermé,	54.0
do. 1843	French Government Reports,	60.1
Marseilles,	Bousquet,	75.0
Sweden, 1816-35,	Registrar-General's Report,	69.2

It has long been a prevalent idea, that vaccine matter may lose some of its efficacy in passing through so many human bodies, and that it would, therefore, be advisable to recur to the original source; and although it has been maintained, that this view is questionable, and that vaccine matter, in its most recent state, possesses no more preventive efficacy, in reference to varioloid, than that which has been in use since the discovery of vaccination, the opposite opinion is steadily gaining ground under better opportunities for observation. The Royal Jennerian Institution, it is said, employs the same lymph now that has been in use since its first foundation, in 1806. The Small-pox Hospital, of London, however, changed their stock of lymph in 1837, and a marked improvement, we are told by Dr. Gregory, was perceptible in the resulting vesicles. The local inflammation was more severe; the constitutional symptoms were more violent; the virus was more energetic; the most minute incision took effect, and the lymph, secreted in the pock on the 9th and 10th day, was still in an active state. Such has been the effect of vaccine matter obtained fresh from the cow, in the year 1838, by Mr. Estlin, of Bristol, England. By Mr. Estlin and Dr. Carpenter, of Bristol, the author was favoured with a few points of lymph, eleven removes from the cow; and it was extensively used by the author, and by his friends, Professors Huston and Meigs, and by Drs. Bridges and Kirkbride, of Philadelphia, and others. It was with this lymph, that Dr. Kirkbride performed the revaccinations referred to above; and he remarks, that although some members of



the profession appeared disposed to reject the new virus, from the severity of the symptoms which it induces, yet, except in three cases, he never witnessed sloughing or other unpleasant effects. His own observations, he adds, induce him to put more confidence in its prophylactic powers than in the old virus, "although this point can only be settled by time, and an enlarged experience by the profession generally."

As in the case of small-pox, some persons appear to be unsusceptible of cow-pox; and singular anomalies are observed in this respect. At times, after repeated failures, the individual may take the infection, and the disease go regularly through its stages. It would seem to be a fair inference, that should this resistance to cow-pox continue, there would be, for the time, an equal resistance to small-pox; but this has not been sufficiently proved; and indeed has been discredited.

### 3. GLANDERS.

SYNON. *Equinia*; *Fr. Morve*; *Ger. Rotzkrankheit*.

The horse, the ass, and the mule, are the only animals in which, so far as is known, glanders is generated spontaneously. It is the most formidable of all the diseases to which the horse is subject. It has been recognised from the time of Hippocrates; and, according to Mr. Youatt, few modern veterinary writers have given a more accurate or complete account of its symptoms than is to be found in the works of the Father of Medicine.

It has only been of comparatively late years, that the transmissibility of glanders from the horse to man has been placed beyond doubt, and it is one of the additions to our knowledge for which we are mainly indebted to Dr. Elliotson; but the term *equinia*, meaning, as it does, an affection derived from the horse, as *vaccinia* means one derived from the cow, has, with much propriety, been extended by M. Schedel, so as to include two different affections; the *one* a mild pustular disease, derived from the matter of grease in horses; the *other* a disagreeable scourge, of a pustular character, and proceeding from the glandered horse.

1. *Equinia mitis*.—This occurs on the hands of those who attend upon horses and dress the heels when they are affected with grease—a disease in the horse attended with inflammation and swelling of the heels, from which, at a certain period of the affection, a very acrid thin matter exudes, which, when applied to any abrasion of the skin, gives occasion to a pustular affection. The pustules are large, very similar to those of ecthyma, elevated, and with a red purple tumid base. They vary in number, and this, perhaps, is partly dependent upon the degree of soundness of the skin. About the 8th day, the pustules properly deserve the name,—being filled with a fluid, that is unquestionably purulent; and, about the 10th or 12th day, they begin to desiccate, forming thick scabs, which leave well-marked cicatrices.

It was at one time believed by many, and—as already remarked—even by the illustrious discoverer of vaccination himself, that the matter of grease, when applied to the udder of the cow, was the source of natural cow-pox; and that it was thus applied by the same farm servants attending on both animals. Jenner, however, subsequently

modified his opinion as to the cow-pox being derived exclusively from the horse. M. Schedel affirms, that he has attempted to inoculate upon the teats and udders of several cows the matter from the pustules of *equinia mitis*, which occurred on the hands of a farrier; but the experiment did not produce any appearance of cow-pox; and another writer and experimenter, Mr. Ceely, affirms, that he has never been able to connect casual variolæ vaccinæ in the cow with the matter of grease.

The treatment of this grease-pox requires but little attention. Antiphlogistics internally, and emollient applications externally, are all that are needed.

2. *Equinia glandulosa* is the serious affection, which is produced by the glandered horse. The disease may occur in the human subject under different forms. *First*, under that of *simple acute glanders*, in which the nasal cavities and adjoining parts are attacked. *Secondly*, under that of *acute farcy glanders*, which appears on various parts, in the form of small tumours, that suppurate and give rise to foul ulcers. *Thirdly*. These varieties may occur separately, or they may be produced at the same time, or one may precede the other. *Fourthly*. Each form may occur *chronically*. It is properly remarked, however, by M. Schedel, that these and other varieties, which have been pointed out, constitute one and the same disease; that they are produced by the same specific infection, and that the acute forms are generally met with together.

Acute glanders commences with symptoms very similar to those of acute rheumatism; and, along with these, there is much heat about the nose and trachea; a copious discharge takes place from the nostrils, which become swollen; the nose and surrounding parts are of a bright red, and afterwards of a livid colour; and the swelling extends to one or both of the eyelids. A profuse tenacious mucus, at first of a deep yellow, but afterwards of a bloody or dark sanious appearance, is discharged from one or both nostrils, and at times, from the eyes. The agitation and tremor, at this period, constitute a very remarkable symptom. The skin is hot; the pulse frequent, and usually soft and weak; the respiration rapid and short; the tongue dry; the thirst intense, and the mind incoherent or wandering. Livid patches appear on the sides of the nose, cheeks, or forehead, which are soon followed by copious sweats, and a gangrenous state of the diseased parts, succeeded by delirium, tremor and death in a few days. This form of the disease—it is said by M. Schedel—is seldom, if ever, accompanied with pustules or tumours. In the large mass of cases, however, which prove fatal, pustular eruption and tumours are seen. This is the *Farcy glanders*, Fr. *Morve farcineuse*. The eruption, which usually appears about the eighth day, consists of large pustules in livid patches, and of small tumours on different parts of the body. The pustules are round, often umbilicated, and contain a purulent fluid, with a little coagulable lymph, in the form of a white soft substance, very similar to that contained in variolous pustules, and in the pustules induced by the application of tartarized antimony ointment; the umbilicated form is, however, by no means constant. The size of the pustules varies

from that of a pea to that of a mulberry: to the latter they often bear a great resemblance in their deep purple colour. Gangrene occasionally occurs in some of these.

Along with the eruption, small tumours appear on different parts of the body, having a shining red appearance, which soon changes to a dark livid brown. At first, they are hard and painful, but their surface soon cracks, and discharges a thin acrid sanies. These tumours sometimes mortify, but more frequently, they communicate with deep-seated abscesses, formed in and between the muscular parts. They have even been found to communicate with the cavity of the thorax. Other eruptions appear occasionally at the same time; not at once, but in successive crops, sometimes as late as the twentieth day. The pustular eruption does not seem to be confined to the surface of the body. It is found in the Schneiderian membrane, in that of the frontal sinuses, mouth, fauces, larynx, and even, it is affirmed, in the mucous membrane of the intestines.

The general symptoms are, great prostration, thirst, frequent tremors, agitation, and delirium; and, according to M. Schedel, all the cases of acute farcy glanders, yet on record, have terminated fatally. The discharge from the nostrils is not always apparent, and this has been explained by the matter making its way into the throat, owing to the patient lying on his back.

Examination after death has exhibited the lining membrane of the nasal cavities studded with clusters of small, flat, unequal, white pustules, with irregular ulcerations, and mortified surfaces of varied extent. The septum nasi is almost always ulcerated, and sometimes perforated, and the nostrils and frontal sinuses contain a dark viscid frothy mucus. On dividing the gangrenous tumours, the muscles often appear decomposed: they are of a dark colour; exhale a peculiar fetid odour, and contain specks of purulent matter, with which the muscular tissue appears to be infiltrated. White pustular eruptions, like those in the nasal cavities, sometimes also exist in the mucous membranes of the small and large intestines. Between the muscles, too, large abscesses often form; and lymph or pus is found, at times, in some of the articulations.

*Chronic glanders* is not, in general, accompanied by any eruption. It is confined to one or the other nostril. At other times, tumours appear slowly and successively on different parts, and suppurate, constituting *chronic farcy glanders*. Sometimes, both affections appear simultaneously in the same individual. The disease does not essentially differ, except in tardiness, from the acute form. Chronic farcy may terminate in acute glanders.

In the acute form, death may occur in a few days; but it more frequently happens about the twelfth day or later. The chronic variety may be protracted for weeks or months, and then terminate in health, or fatally.

**Causes.**—The cause of equinia is evidently the diseased secretion from the glandered horse; and the common opinion is, that absolute contact of this secretion is necessary. There is some reason, however, to believe, that it is communicable through the air by respira-

tion. It would not seem, that glanders is a very contagious disease amongst horses; for it was found, as the result of experiments in France, that of 100 horses exposed to the contagion, only seven or eight suffered; and, on one occasion, when more than 600 glandered horses were collected together at Alfort, not one of the persons who had charge of them was in the slightest degree affected.

Cases are on record in which the disease has been communicated from man to man.

The analogy between the disease and that occasioned by the reception of some other morbid poisons into the system is striking. Wounds, for example, received on dissection, or from handling the skins of animals that have died under special circumstances, induce cutaneous affections, deep-seated abscesses, and febrile phenomena of an analogous nature, and often prove fatal.

In Ireland, it would seem, glanders in man is of frequent occurrence; so much so, that Dr. Graves thinks the legislature is called on to imitate the wise example of the Prussian government in placing glandered horses under the surveillance of the police. It would not appear, however, that the average susceptibility to the poison is great, as but little precaution is generally taken by grooms and veterinary surgeons.

The disease is one of an extremely fatal character, almost hopeless in its acute form, and full of danger in the chronic.

**Treatment.**—It is impracticable to lay down any definite plan of treatment. It has been suggested, that the chlorides of lime, or soda, should be administered internally; but it is doubtful, whether they would be of any decided efficacy. It has, also, been suggested, that they might be used as gargles or injected into the nostrils with benefit. Turpentine embrocations have likewise been advised, employed as warm as they can be borne, and turpentine has been administered internally, in very small doses, frequently repeated. In the chronic form, Dr. Elliotson has found great benefit from the use of creasote. In two cases, he effected a cure in the course of a few weeks, by the sedulous employment of an injection of a dilute solution,<sup>a</sup> thrown up the affected nostril; combining, in one of the cases, the internal use of the remedy.

<sup>a</sup> R.—Creasot. gtt. j.  
Aque f ʒj.—M.

In one case, which terminated favourably to Mr. Travers, a principal remedy was the frequent exhibition of emetics. Fumigated or medicated warm baths, or the vapour bath, with the fumes of sulphur, have likewise been recommended by M. Schedel.

In all cases, both acute and chronic, much must be left to the judgment of the practitioner; who will be guided by the particular phenomena that may present themselves. The internal use of iodine, creasote, and the sulphate of quinia, has been advised by a recent writer, M. Delaharpe.

The author has never met with a case of glanders in the human subject, and, therefore, his description has been drawn from others.

## SECTION V.

## ARTHRITIC FEVERS.

With as much propriety as we establish a division of eruptive fevers, may we form one with the epithet "*arthritic*." In the former, the cutaneous affection forms only a part of the disease, and the same may be said of the affection of the joints in rheumatism and gout—the only diseases that fall under this division. There are, indeed, many points of resemblance between erysipelas and acute rheumatism. They are both certainly constitutional disorders, and the fever, that accompanies them, is not always inflammatory. The constitutional disease, too, generally runs a definite course, although it may, at times, perhaps, be cut short by medicine.

Between the two diseases that belong to this division—rheumatism and gout—there is much analogy; at times, indeed, the difficulty of decision as to the precise affection is so great, that the knot is cut by affirming that it is a mongrel affection, composed of both, and, therefore, termed "*rheumatic gout*." The essential points of difference between the two maladies will be understood by the following history.

## I. RHEUMATISM.

SYNON. Rheumatismus, Rheuma, Myodynia; *Fr.* Rhumatisme; *Ger.* Muskelschmerz, Muskelfluss, Gliederreissen, Flusskrankheit, Fluss.

Rheumatism presents itself under two distinct forms—the *acute* and the *chronic*,—so distinct, that it has been questioned, whether they ought to be regarded as varieties of the same disease, or whether the former ought not to be esteemed a true arthritis, and the latter a form of neuralgia; but it may be well to postpone farther reference to this point, until the phenomena of the disease have been considered.

1. *Acute Rheumatism.*

SYNON. Rheumatismus, Rh. acutus inflammatorius, Rh. universalis febrilis, Arthrosia acuta, Myositis, Myitis, Cauma rheumatismus, Arthritis rheumatismus, Rheumatismus calidus, Rh. hypersthenicus, Synocha rheumatica, Febris rheumatica inflammatoria, Rheumatic fever, Acute articular rheumatism; *Fr.* Rhumatisme aigu, Fièvre rhumatismale; *Ger.* Entzündlichfebrhafter Rheumatismus, Acute Muskelfluss, Rheumatisches Fieber.

This painful affection has been long known, and its manifest phenomena have been well described; but, as elsewhere stated, one of the most remarkable and interesting circumstances attending it—the supervention of pericarditis and endocarditis—has been well depicted and understood of comparatively late years only.

**Diagnosis.**—The disease generally commences with the ordinary prodromic signs of fever; after which the pyrexia develops itself, and the febrile symptoms run, at times, exceedingly high; the skin being pungently hot, and the pulse strong, quick, full and bounding,—beating, occasionally, 100 or 120 times or more in the minute. From the first, there is more or less pain or stiffness in the joints, which soon augments to acute pain, so that the greatest suffering is occasioned by any attempt to move them. When the affected parts are examined, they are generally found red, swollen, and extremely painful

to the touch. At times, however, where the suffering is intense, but little evidence of inflammation may be perceptible. The pain is always worse during the night, which tends not a little to the aggravation of the patient's sufferings. This has been ascribed to increased warmth; but Dr. Macleod properly refers it rather to a nocturnal exacerbation, which is experienced in this, as well as in most other febrile diseases. Every practitioner must, indeed, have observed the increase of symptoms during the night, when the patient is constantly confined to the bed both during the day and the night, and when the degree of warmth is probably diminished rather than increased.

It rarely happens, that acute rheumatism is restricted to one joint; not uncommonly, almost every joint of the extremities is affected, so that the patient is compelled to remain in the position in which he may be placed. Fortunately, however, the inflammation rarely continues intense in any one joint for a length of time; a remission takes place, during which he has some alleviation of his sufferings; or, what frequently happens in the course of this "changeable phlegmasia," it leaves one joint, to a greater or less degree—sometimes entirely,—and shifts its seat, or extends to another; and in this manner, the disease gradually wears itself out. It is this mobility, however, which gives occasion to the only danger that attends it. It is essentially, perhaps, seated in the fibrous and muscular tissues,—sometimes in one, at others in both, whence it may extend to the serous tissues; and, hence, an extension, or metastasis or translation, for it is not positively settled which, takes place—occasionally from the joints to analogous tissues, as the fibrous membrane surrounding the heart, whence it extends to the serous layer of the same; and, not unfrequently, the serous lining of the cavities of the heart—the endocardium—becomes implicated. So long as the disease continues in the fibrous and muscular tissues surrounding the articulations, it does not affect structures which are essential to life, but when it spreads to analogous structures connected with the great vital organs, it assumes a most serious character.

It has been remarked, that the fever which usually accompanies acute rheumatism, presents signs of great activity; and, when blood is drawn, it exhibits important modifications in its character; the buffy coat is always very thick; the blood is decidedly loaded with fibrin; and, owing to the powerful action of the heart and arteries, it is florid, and sometimes issues from the vein with a distinct pulsation; yet, what is singular, the skin—although far above the natural temperature—is often bathed in the most profuse perspiration; large beads of sweat, of an acid odour—lactic acid—covering the forehead; and the bed-clothes being often literally wet with the secretion. The tongue is usually moist, but is more or less loaded with a white mucous covering, and is frequently red, especially around the edges. The appetite is generally impaired; but the digestive function may go on without much modification, the bowels being regular; or, if constipated, slight doses of cathartics may be sufficient to excite them to action. The thirst—as in all febrile diseases—is considerable, but not so much so, perhaps, as in others, and the encephalic functions are generally unaffected. The urine is remarkable, according to M. Andral, for the

quantity of uric or rosacic acid, which it contains. It would seem, however, according to M. Simon, to present generally the inflammatory type. When the circulatory excitement is great, it is sometimes of a deep purple red colour, like claret; its reaction is very strongly developed; and very copious, fawn-coloured or lateritious sediments are deposited, which consist, for the most part, of urate of ammonia, but occasionally of crystallized uric acid.

Under the head of PERICARDITIS and of ENDOCARDITIS, the connexion of those affections with the disease now under consideration was treated of. It has been presumed, of late years, that this connexion is infinitely more frequent than was formerly, and even recently, imagined. A late writer, M. Bouillaud, has expressed the opinion, that about one half of those who suffer under violent acute articular rheumatism are affected with pericarditis, and we know, that endocarditis is a common accompaniment. It would appear, that the origin of these diseases of the heart is frequently in acute rheumatism;—for of 92 cases of pericarditis or endocarditis, referred to by M. Bouillaud, 31 of pericarditis, and 14 of endocarditis, coincided with articular rheumatism. A recent observer, indeed, Dr. Latham, makes the proportion of sufferers from acute rheumatism, who are attacked with cardiac inflammation, to be two-thirds,—which is probably above the average. Between the years 1836 and 1840 inclusive, there occurred under his care, in St. Bartholomew's Hospital, 136 cases of acute rheumatism, which, in regard to cardiac disease, are arranged by him as follows:—

Cases of acute rheumatism, . . . . .	136
Heart exempt in, . . . . .	46
affected in, . . . . .	90
Seat of disease in the heart :	
Endocardium alone in, . . . . .	63
Pericardium alone in, . . . . .	7
Endocardium and pericardium in, . . . . .	11
Doubtful in, . . . . .	9
Deaths, 3; in all of whom both endocardium and pericardium were affected.	

One of the most important points, therefore, in the investigation of the disease, is to watch the supervention of the morbid action in the fibrous tissues of the heart. It is not necessary to repeat here the symptoms of pericarditis and endocarditis,—but the occurrence of dyspnœa, with more or less anxiety, jerking, or feeble and rapid pulse, and tumultuous action of the heart, ought to direct the attention of the practitioner to that viscus; and if he discover, by the physical signs and the functional phenomena, the existence of inflammatory action there, it must be treated as if the disease were unconnected with rheumatism; for nothing is better established, according to M. Andral, than that although primary rheumatism, seated in the fibrous and muscular tissues around the joints, is remarkable for its great and rapid change of seat, secondary rheumatism—if it may be so termed—loses this mobility when it fixes upon a serous membrane.

It may be proper to remark here, that the *bruit de soufflet* or bellows' sound, on which so much stress has been laid as an evidence of endocarditis, was found by M. Chomel to be present in not more than about

one in every three cases, and that he detected it in other acute diseases, in which there was no reason to suspect any complication of cardiac disturbance, viz. in five cases of pneumonia, three of which recovered and two proved fatal; in three cases of small-pox; in one case of typhoid fever; in two cases of bronchitis, and in several of acute metritis; whence M. Chomel concludes, not only that this auscultatory sign is far from being constant in acute rheumatism, but also, that it is not unfrequently present in other acute diseases: still where it does exist, it is a symptom of value.

Dr. Graves states, that rheumatic fever may exist without the affection of the joints; and that pericarditis may occur as a primary symptom before the appearance of the articular swelling. This is probable. The author has certainly seen many cases in which the signs of pericarditis were amongst the earliest phenomena.

As the disease may attack all fibrous, fibro-serous, and muscular structures, it is easy to see, that we may have rheumatism of the diaphragm, meninges of the brain, sclerotica, stomach, intestines, bladder, capsules of the kidney, liver, &c. &c. The occurrence of severe pain in the stomach, in the course of an attack of acute articular rheumatism, or independently of it, may indicate rheumatism of the stomach. When it attacks the intestines, the pain is often excessively severe, and shifts from place to place—that is from one part of the muscular coat to another. In the bladder, it is indicated by severe pain in the hypogastric region, and behind the pubes, with retention of urine perhaps in most cases; and when it affects other parts, the seat and character of the pain will usually lead to an accurate diagnosis: not long ago, the author had under his care a case of what seemed to be rheumatism or gout of the intestines—neuralgia certainly—which occasioned intense suffering, but terminated favourably after a continuance of two or three weeks.

The duration of acute articular rheumatism varies. At times, though rarely, it terminates in health in the course of a fortnight; but far more frequently, even when confined to the joints, it runs on for three weeks or a month. Whilst restricted to the joints, as already observed, it may be considered devoid of danger; but, when pericarditis or endocarditis supervenes, there are two sources of apprehension:—the disease may terminate fatally in the acute stage; or it may become chronic, and the issue be unfavourable; or, lastly, it may give occasion to chronic heart disease, which may lay the foundation for dropsy, from which the patient may ultimately recover, or, at least, pass comfortably through life, the system having become accustomed to the modification in the structure of the organ. Recovery is more frequent from the endocarditis than from the pericarditis of rheumatism.

**Causes.**—Nothing perhaps seems more established than the agency of exposure to cold in the production of acute articular rheumatism, as well as of the chronic form; yet the disease cannot always be traced to this cause. Sitting in a draught, which gives occasion to irregularity of capillary action in the part exposed to it, is proverbially a cause not only of rheumatism, but of almost every other malady: the same effect follows sleeping in damp sheets, remaining long in wet



clothes, and, in fact, any exposure of a part of the surface of the body to cold and moisture, especially when other parts are protected against it, or when the body is in a state of active perspiration. It would seem probable, that these disturbing influences should cause acute articular rheumatism, as they appear to do other diseases, and especially neuralgia or chronic rheumatism; yet this has been denied by M. Chomel. He considers, at least, that their influence has been exaggerated; and it must be admitted, that predisposing agencies must exist, which are by no means easy of appreciation. These have been supposed by MM. Roche and Andral, to consist in too great activity of hæmatisis, great sensibility of the skin, and very considerable development of the capillary system of the surface; but this does not seem to be a sufficient explanation. There can be no doubt, however, that previous attacks lay the foundation for a strong predisposition. It is a disease, which is extremely liable to recur. It has appeared, also, to the author, that a predisposition may be laid in organization. He certainly has seen some severe cases of acute articular rheumatism in those whose progenitors had suffered from the same condition. No one denies, that a predisposition to gout may be engendered in this way, and it is not difficult to imagine, that a similar predisposition may exist in this congenerous affection. Of 72 patients questioned by M. Chomel on this point, 36 were born of parents who had been rheumatic; and it is affirmed by Dr. R. B. Todd, that the children of gouty parents are more liable to this disease than those who have not laboured under the gouty diathesis.

Acute articular rheumatism generally attacks young persons, or adults. The author has met with many cases, about the age of puberty; and as far as his experience has extended, the number of females has appeared to exceed that of males. It may occur at all seasons, but is most common, perhaps, late in the spring, or in the early part of summer,—a period of the year in which the agency of cold would seem to be more limited than in autumn, winter, or early spring. This circumstance has influenced the author in the opinion, which it has been necessary for him to give in one or two cases, where rheumatism had previously attacked the heart, and where the question was, whether it were advisable for the individual to subject himself to serious inconvenience in order to spend his winter in a warm climate with the view of escaping the disease. In neither of the cases did the persons suffer during the following winter by remaining at home. As a general rule, a warm climate is favourable for the rheumatic; but, when rheumatism is connected with an irritable condition of the digestive organs, or a relaxed state of the system, a torrid climate has been found to disagree. In many of the West India islands, rheumatic affections would seem to be by no means uncommon; and it is affirmed, that even acute rheumatism is not rare. In Jamaica, however, according to Sir James Clark, rheumatic affections would appear to be much less prevalent amongst the British troops than in the windward and leeward command, or in Great Britain.

Other causes have been enumerated—such as the repercussion of eruptions, the stoppage of an accustomed flux, &c. These may exert

some influence, if a predisposition exist; but such influence is not easily appreciable. It has been affirmed by Messrs. Maddock and Sigmond, that where there is a disposition to acute rheumatism, the use of copaiba may develope it.

**Pathological Characters.**—It does not often happen, that opportunities occur for examining the textures around the joints, whilst the inflammation is active in them. The disease, as already remarked, rarely proves fatal, except by the supervention of inflammation in some of the fibrous or muscular tissues that are seated internally, and then the mischief there is predominant, that, for some time before death, the joints cease to be the source of suffering. The author has never met with a case of suppuration or of gangrene of the joints, but these terminations have been witnessed by others.

Under all these circumstances, it is not surprising, that pathologists may differ as to the precise seat of acute rheumatism of the joints. It has been already observed, that it invades every muscular and fibrous tissue, and that ultimately the serous membranes may become implicated. Such may be the case in the articulations,—the synovial, which is a serous membrane, becoming affected last. On dissection, no decisive appearances may be met with. At times, the veins around the articulations have been found gorged with blood—the ligaments, periosteum and synovial membrane being injected and thickened, with small collections of matter in the surrounding cellular tissue, and accumulations of pus or serum in the cavity of the synovial membrane.

It is clear, that the hyperæmia, howsoever induced, in acute articular rheumatism, can scarcely occasion any great organic changes—inasmuch as in the course of a few hours it shifts its seat and leaves behind no evidences of its previous existence. This mobility has, indeed, given rise to the opinion amongst many, that the disease is essentially seated in the nervous system; that the sanguiferous system is affected secondarily; and that it is very probable the nervous filaments of the diseased parts are more considerably involved than any other tissue. Dr. Mackintosh, who supports this view, remarks, however, that he has seen cases, which presented symptoms similar to those of rheumatism, in which, after death, the lymphatics of the limb were found inflamed, and filled with a puriform fluid. Some, again, have considered acute rheumatism to be nothing more than acute inflammation of the lining membrane of the arteries. The whole disease is certainly peculiar, and appears to be more neuropathic than ordinary inflammation. Its extremely changeable character sanctions this idea, and the remedies that are found serviceable, are not always those which we should think of prescribing in ordinary active phlegmasia. It is proper to remark, however, that the increase of fibrin in the blood obeys the same laws as in the ordinary phlegmasiæ, always exhibiting, in a more or less marked degree, the characters of hyperinosis. The clot is rather small, consistent, and has often a strong buffy coat. Difference exists, however, amongst observers in regard to the character of the clot,—M. Hasse stating, that he has observed a solid clot; although when the buffy coat was

very strong, its consistence was less on its lower surface; whilst M. Jennings affirms, that the clot under the buffy coat is so loose as to fall to pieces on the slightest touch. Its character varies; but the author has frequently seen it as described by Mr. Jennings. The serum is usually clear and of a deep yellow colour. In acute rheumatism, the fibrin augments in a constant manner. M. Andral analysed the blood of 43 bleedings; in one of which the fibrin marked 4—the healthy proportion being 3 in 1000; in six, it marked 5; in fifteen, 6; in thirteen, 7; in three, 8; in three, 9; and in two, 10. When, however, the rheumatism was subacute, it oscillated between 4 and 5; and when decidedly chronic, it did not exceed the healthy proportion, whence it may be inferred with M. Simon, that, provided there be no other disturbing influences, as rheumatism loses its acute character, the blood generally throws off the specific characters of hyperinosis.

Both acute rheumatism and gout are diseases of the blood, the phenomena of which sanction the idea of their being due to the presence of some extraneous matter, that has to be eliminated.

**Treatment.**—Difference of opinion has existed in regard to the management of acute articular rheumatism; and the results of treatment have tended to much of that diversity of sentiment which has existed in relation to its pathology. It has been already remarked, that although it doubtless is, when developed, inflammatory, the neuropathic condition, which probably exists primarily, cannot be lost sight of. The general inflammatory diathesis, the local inflammation of the parts, and the buffed state of the blood are arguments brought forward by those who recommend the vigorous use of the lancet; but it must be borne in mind, that the inflammatory state is peculiar; that the skin is often hot, and yet bathed with perspiration,—that the affection as rapidly leaves a part as it attacks it; that the ordinary signs of inflammation are not seen in necroscopic investigations; and that the buffed condition of the blood is not an exclusive evidence of inflammation, as it prevails in diseases, unquestionably anæmic and neuropathic, that are attended with great velocity of the circulation. Attacking the frame, however, so vigorously as it usually does, it is not surprising that, at all times, there should have been advocates for the free use of the lancet. Bloodletting is, indeed, one of the remedies most frequently, and in certain states, most judiciously brought against it. Of late, however, the profession have been startled by the extent to which it has been recommended. The formula proposed by M. Bouillaud, is the following:—on the day of the admission of the patient—supposing him to be of good constitution, and in the vigour of life—at the evening visit, a bleeding of four cups is practised. On the second day, a double bleeding from the arm, of three cups, and a cup and a half; and between these bleedings, local bloodletting, either by leeches or by cupping-glasses,—the local bloodletting to take away three, four, and even five cups of blood: the leeches and cups to be applied around the joints most affected, and on the præcordial region, when the heart is seriously implicated. On the third day, the patient is bled from the arm, and a second application of cups is made either to the præcordial region or around the articu-

lations. If, on the fourth day, the fever, pain, tumefaction, and, indeed, the whole inflammatory process have yielded, which is sometimes the case, no more blood need be taken. In the contrary case, another bleeding from the arm, to the extent of three or four cups, is practised. On the fifth day, the resolution of the disease, according to M. Bouillaud, is generally in full activity. In very severe cases, however, the rheumatic fever may be still so marked, that a bleeding from the arm to three cups, or local bloodletting to the same amount, may be advisable. On the sixth, seventh, or eighth day convalescence is manifest, and nourishment is allowed the patient. Such is the prescribed formula of M. Bouillaud, for arresting acute articular rheumatism,—“strangling it,”—to use his own expression—by bleeding *coup sur coup*. The author has had recourse to it in what appeared favourable cases, but the results have not been equally fortunate; and it has seemed to him, that the too vigorous use of the lancet has occasionally rather favoured the shifting of seat, which has to be so much dreaded. If the disease be really neuropathic essentially, and the phlegmasia the consequence of this, it can be understood, that the too great abstraction of blood may develop the nervous impressibility, and, in this manner, constitute a predisposition to other tissues becoming implicated. It can, of course, only be admissible in vigorous individuals; and even in them, the more sparing use of the lancet, with the adjuncts to be mentioned hereafter, appears to be less liable to objection. There are cases, in private practice, and most of those that are seen in our eleemosynary institutions, in which any abstraction of blood from the general system could not fail to prove injurious. Weak, nervous, impressible persons, especially if they have led a life of dissipation, and the dissolute of all kinds, can scarcely fail to have the neuropathia increased by the employment of the lancet.

At the commencement, then, of the disease, bloodletting will commonly be indicated, and it may be necessary to repeat the bleeding more than once; and, throughout the disease, local bloodletting, by means of leeches, may be needed, where the inflammatory symptoms run high. The medium quantity of blood recommended by M. Bouillaud to be lost by well-constituted subjects, in cases of intense, acute, articular rheumatism, is four or five pounds; but it may be necessary, he says, to go as high as seven or eight pounds. In light cases, he does not exceed two or three pounds.

As an adjuvant to general bloodletting, the tartrate of antimony and potassa has been highly extolled of late years, and there are cases, in which its sedative influence has been highly advantageous. The author has frequently administered it under the restrictions and inculcations detailed under another disease, (see INFLAMMATION OF THE LUNGS, vol. i. p. 337,) and occasionally with good effects. It has appeared to him, however, that the antimony has acted most beneficially where it has produced nausea, and the nausea has been kept up two or three days in succession. The joint sedative and revellent agency has seemed to break in upon the neuropathic and vascular erethism. It is probably in this way that most of the narcotics and acro-narcotics exert their salutary agency. The author has not found

them decidedly efficacious, unless their peculiar effects upon the system were clearly evinced.

The plan of treating acute articular rheumatism by opium has been long practised, but the remedy was generally given in the form of Dover's powder—the *pulvis ipecacuanhæ compositus*—which is a celebrated diaphoretic, rather than with the view of exerting the specific effects of opium on the system: the general feeling has, indeed, been to administer diaphoretics, notwithstanding that the skin may be even at the time bathed in profuse perspiration. Opium has, however, been given with another object—to induce narcosis, and establish a new impression and action on the nervous system. Care must, of course, be had not to push the remedy too far, and yet to keep the patient clearly under its influence. With this view, any of the preparations of opium may be prescribed, but the soft pill is as efficacious as any other,<sup>a</sup> or the acetate or the sulphate of morphia;<sup>b</sup> or the *pulvis ipecacuanhæ compositus*; but the last can rarely be given in quantity sufficient for the opium to produce its narcotic action, without the *ipecacuanha* contained in it disordering the stomach.

<sup>a</sup> R.—Opii gr. j.—iss.  
Ext. hyoscyam. gr. iij.—f. pil.  
ter quaterve die sumend.

<sup>b</sup> R.—Morphiæ acet. gr. j.  
Mucilag. acaciæ,  
Syrup. aa fʒss.  
Aquæ fʒiv.—M.  
Dose, a spoonful, every two hours.

*Ipecacuanha* is frequently, however, compined with opium, and administered with the object to be mentioned presently.

“When first, and for a few years after, I became physician to an hospital,” says a very recent writer—Dr. Latham—“opium was my remedy in all cases of acute rheumatism, excepting such as presented some special circumstance to forbid its use, or to require a different treatment. My single purpose was to abate pain, and to quiet the nervous system. The dose I employed varied from two grains to five or six in twenty-four hours. I began with one grain every twelve hours. Then, as the patient seemed to bear it, or to need it, I gave a grain every eight hours; then every six; and then as often as every four. There were many cases for which a grain every twelve hours, or two grains in the twenty-four, were quite enough. And there were few for which a grain every four hours, or as much as six grains in the twenty-four, were needed. The majority, however, required a grain every eight or every six hours, or three or four grains in the twenty-four. In the mean time, while I thus employed opium *immediately* to abate pain and quiet the nervous system, and *ultimately* to cure the disease, I had no other care except to keep the bowels from being bound, but not to purge them:”—and he adds—“Considering what acute rheumatism is, in the majority of cases, and what it needs, and what it will bear, I regard the indication found in the nervous system to be upon the whole a safer and better guide for its treatment than that found in the vascular, and opium upon the whole to be a safer and better remedy than venesection; if we are to follow one of the two indications, and to use one of the two remedies only.”

More recently, Dr. Corrigan has strongly urged the value of the

treatment by opium exclusively. He gives one or two grains every second or third hour, or ten, twelve, or more grains in the twenty-four hours. The opium is increased in dose, both as regards frequency and quantity, until there is decided relief, and kept at that dose until the complaint is steadily subsiding. The author has been well satisfied with this plan in many cases. He has no fears of the opium, which in full doses is a precious sedative; and therefore admirably adapted for a disease of anomalous and neuropathic character.

Of the acro-narcotics, or those vegetable articles of the materia medica, which, in large doses, irritate the lining membrane of the stomach and bowels, and, at the same time, induce narcosis, no one has, of late years, been so much employed in this disease as colchicum. It is doubtless, at times, effective; but very frequently fails even when administered with due intelligence and care. Dr. W. Budd, expresses his conviction, from the observation of numerous cases, of its entire inefficacy,—a conviction which, he says, is held by many physicians of great experience. When it has proved beneficial, it has been pushed to the extent of slightly affecting the system, as shown by nausea, or vomiting and purging, with some cerebral confusion. The author cannot have been mistaken in referring beneficial effects to it, when the system had been kept, for some time, under its operation. Administered, however, to a less extent, he has not seen any good results from it, although he has prescribed it in numerous instances. Various preparations are employed:—the powder (gr. iij.—x. three or four times a day); the *vinum colchici radici* (gtt. x. three times a day); the *extractum colchici aceticum* of the London Pharmacopœia (gr. j.—ij. three or four times a day); the *tinctura seminum colchici*, in the same dose as the wine of the root; and the *vinum seminum colchici*. The London Pharmacopœia has a compound tincture of colchicum, made by macerating two ounces and a half of bruised colchicum seeds in a pint of aromatic spirit of ammonia, which is much used by British practitioners.

Dr. C. J. B. Williams considers, that colchicum acts by eliminating morbid matter from the system; and he advises, that it should be continued for a week or ten days after the pain has subsided, in order to get rid of the rheumatic matter, when he combines it with a mild tonic, iodide of potassium, and good diet. It is more than questionable, however, whether this be the *modus operandi* of colchicum. Some of the most efficacious agents, as opium in full doses, and sulphate of quinia or cinchona, could scarcely be presumed to act by removing morbid matter from the system.

Aconite has been largely employed in rheumatism since the time of Störek; and, recently it has been greatly extolled by Dr. Fleming, who affirms, that the average period, required to effect a cure by it, was five or six days;—certainly a very short time. He affirms, that “aconite not only effects a cure in a shorter period than any other mode of treatment, but appears to possess the great negative advantage of not increasing the liability to extension of the disease to the membranes of the heart. Indeed, it seems rather to protect the patient from that dangerous complication.”

The results, appear to the author to be too favourable; and apprehension may well be entertained that future experience will show this to be the fact. Dr. Fleming gives it in the form of the tincture of aconite,—five minims being the dose—to be repeated in four hours; and then keeping up the sedation by half this quantity every three or four hours,—carefully watching its effects upon the circulation.

Aconitia, veratria, and delphinia, have been likewise used, both internally and externally.

R.—Aconitiæ, seu Delphinix seu Veratriæ, gr. iv.  
Alcohol. f ʒj.

Dose, ten, fifteen, twenty to twenty-five drops, in a glass of water.

The tincture may also be applied externally, and it is said with advantage.

Cimicifuga,\* carried to the extent of producing catharsis, and even slight narcosis, has likewise been of service.

\* R.—Cimicif. contus. ʒj.

Coque paulisper in aquæ Oj.

Dose, one to two fluid ounces, several times a day.

The late Dr. Hope strongly urged the success of a mixed plan of treatment—bleeding, colchicum, and opium, first mentioned to him, by Dr. Chambers, of London, and followed more or less closely by many other physicians. After a full bleeding, or even two in the robust—but, without any bleeding in the case of the feeble and delicate—eight or ten grains of calomel, with a grain and a half of opium, the dose being varied according to the age of the person, and the severity of the case, are administered every night, and followed every morning by a strong black dose—a solution of salts in infusion of senna—sufficient to insure four or five evacuations at least. With this treatment is combined, three times a day, a saline draught containing from fifteen to twenty minims of the vinum colchici, and five grains of Dover's powder. When the pain and swelling are greatly abated, if not almost gone, which, according to Dr. Hope, frequently happens within two days, and almost always within four, the calomel is omitted, or sooner if the gums become at all tender. The opium, however, is continued in the quantity of a grain or a grain and a half at bedtime, and in severe cases a grain is also given at noon. The colchicum and black dose are also continued as at first. This plan, according to Dr. Hope, is so successful, that it is a case of exception, if the patient be not well in a week. The great advantages of this course, he considers to be: *First*. That the patient is generally sound, well, and fit for work in a week or ten days after the pains have ceased. *Secondly*. That the gums are rarely affected, especially if it be previously ascertained, that the patient has not a morbid susceptibility for the action of mercury. *Thirdly*. That it is rare to see inflammation of the heart, if the treatment be begun early,—not oftener, Dr. Hope thinks, than in one of a dozen cases. *Fourthly*. That if the slightest symptoms of endo-pericarditis or pericarditis do supervene, a few extra doses of calomel and opium, given every four or six hours, will generally affect the constitution in twenty or thirty hours, which, with two or three cuppings or

leeches over the region of the heart, almost always places the patient in a state of safety.

In a disease, which is benefited by new impressions made upon the alimentary canal and on the nervous system generally, it might be presumed that revellents in general would be found to be of eminent service. Unfortunately, owing to the generally self-limited tendency of the malady, these advantages are less than might be anticipated *à priori*. This is the case with the calomel and opium treatment, whether given as a revellent on the intestinal canal, or pushed so as to excite ptyalism, aided or not by the application of mercurial unguents to the inflamed parts. The inconveniences, however, of the ptyalism are often so great as to completely overpower any benefit that might have been expected. It is not surprising, consequently, that a modern author, Dr. Mackintosh, should thus express himself on this matter. "I can say nothing, except in condemnation of another plan too indiscriminately followed, viz. the calomel and opium treatment. I have often seen the tongues of patients swollen and ulcerated, and profuse salivation produced, without the least signs of amendment." He properly, also, animadvert on the "old plan of sweating patients for ten or fourteen days, by means of large and repeated doses of Dover's powder, warm diluents and a load of bed-clothes," and expresses the hope that it is now very generally abandoned, "as it is attended with the same injurious effects as too frequently repeated and indiscriminate bleedings." The plan is still, however, pursued by some practitioners to the great distress of the patient, who generally sighs for ice-cold drinks, and a comfortable temperature.

The course advised by Dr. Chambers and Dr. Hope is rather to obtain the purgative than the eutrophic effect of the calomel; and accordingly it has been designated by Dr. Latham as the "purgative plan;" yet he considers that "the purgatives would not answer the end without the calomel." "Of that," he says, "I am quite certain; neither would the calomel answer without the purgatives, unless it produced of itself ample evacuations from the bowels." "It is probable," he adds, "that the remedial efficacy of the plan resides essentially in the calomel; in calomel, however, not as *mercury*, but as itself—*calomel*:"—all of which the author's experience would lead him to regard as more than doubtful; inasmuch as he has seen the same effects produced by other agents, that produce a cathartic and therefore revellent operation. Dr. Latham, indeed, elsewhere remarks, that he has not found colchicum produce any abatement of swelling, and of pain, of vascular action, and of fever, "until it has begun to purge smartly, and even painfully."

Purging, which is such an excellent revellent in many cases, is, however, scarcely admissible on account of the suffering that necessarily attends the repeated evacuation of the bowels when the joints are so painful; but it is important to keep the bowels open, which is, in general, easily accomplished by the milder cathartics, as castor oil (ʒij.), or rhubarb and magnesia,<sup>3</sup> or any gentle cathartic pill. (*Pil. aloes*, gr. viij.; divide in pil. ij.—to be taken for a dose.)



\* R.—Rhei. pulv.  
Magnes. aa gr. x.  
Zingib. pulv. gr. iv., seu  
Ol. carui gtt. iij.—M.

Of the different revellents, cupping on the back, strongly recommended by Professor J. K. Mitchell, of Philadelphia, has appeared to have been most frequently attended with happy results. An idea has been entertained, that this has been owing to the depletion and revulsion effected near the origin of the nerves that are concerned in the articular inflammation. Whatsoever view may be entertained on this matter, it is unquestionable, that the highly sensitive integument of the back is an excellent locality for revulsion in many diseases; and it is not necessary, that the mischief should be directly or indirectly connected with the spinal marrow or its sheath to explain this. The author has seen the intense suffering in the joints as effectively relieved by cupping over the loins as by any other agency.

Such are the agents that would appear to be best adapted for all cases, except such as present themselves in debilitated constitutions, and under circumstances of asthenia, which appear to forbid their use;—bleeding—general and local—over the joints; the use of narcotics and acro-narcotics, and revulsive bleeding on the back. Some, however, and individuals of no little note in their profession,—as Drs. Morton, Hulse, Fothergill, Haygarth, and Willan—under the view that the disease is neuropathic rather than inflammatory, have recommended an opposite course. “The ill success of it,” (bleeding,) says Willan, “probably first induced other practitioners to adopt an opposite plan; when it was found that Peruvian bark, and vitriolated iron, or the precipitate of it combined with myrrh, as recommended by Dr. Griffiths, afforded both speedy and permanent relief;” and Dr. Haygarth came to the conclusion, from his observations, that “bark does not cure an ague so certainly and so quickly, as it does the acute rheumatism.” The results of the experience of these and other eminent practitioners is in favour of the view, more than once expressed, that this inflammation is peculiar; and that, like the inflammation of erysipelas, it may not always require the vigorous use of antiphlogistics.

The author has had numerous opportunities for witnessing the exclusive use of both modes of treatment; and it is but proper to say, that he does not recollect in any case to have seen the symptoms aggravated under the prudent employment of either. In the mass of cases that occur, except in very active, vigorous habits,—and it is generally applicable even to them,—a combination of the two modes of treatment has appeared as advantageous as any other,—treating the disease, during the early period, by the ordinary antiphlogistics, and afterwards endeavouring to modify the neuropathic condition by the cautious employment of tonics, as the sulphate of quinia.

R.—Quiniæ sulphat. gr. x.—xx.  
Acid. sulph. dil. gtt. x.  
Aquæ fʒvj.—M.

Dose, a fourth part, four times a day.

An observer of no little experience, the late Professor D. Davis, of

the University of London, has expressed his confident belief, that cinchona "is the most powerful remedy that can be employed even in an incipient case of acute rheumatism," and affirms, that "he does not remember a case in which the disease was not happily subdued." "I have often recommended it," he adds, "in cases of pure arthritic rheumatism during its acutest stage, and the disease has always yielded to the remedy; and I have also recommended it in violent pains of the joints, accompanied by alarming complications, but never in any one case injuriously to the interest of my patient. I have, therefore, no difficulty in recommending its adoption to my medical brethren, and especially to those who are most frequently favoured with the opportunities of seeing acute rheumatism in its earlier stages." Dr. Davis recommends the cinchona in the dose of from a scruple to half a drachm, repeated three or four times daily. He always, however, premises the free abstraction of blood. Some years ago, M. Briquet, of Paris, announced, that he had cured acute articular rheumatism, accompanied with violent pain, swelling, redness, fever, &c., in two or three cases by large doses of the sulphate of quinia—about a drachm and a half daily; but it would seem, according to M. Devergie and others, that these large doses could not always be given with impunity,—and that they were apt to occasion serious disturbance of the brain. If care, however, be taken, and the remedy be discontinued, when the first signs of *quininism*—as it has been termed—present themselves—*tinnitus aurium* for example—no inconvenience results. The author has frequently prescribed it in subacute cases from the beginning, and in the quantity of fifteen or twenty grains a day, with marked advantage, and without the slightest unpleasant result. In obstinate cases, he has combined it with opium—three or four grains in the twenty-four hours, with the best effects.

If tonics, however, may be admissible, and even advisable, under the circumstances mentioned, it can rarely or never happen, that powerful excitants, as spirituous liquors made into toddy or punch, or a bottle or two of port wine daily, said to be generally prescribed by some, can be necessary; nor has the author seen any benefit from stimulating articles, like the guaiacum, and other reputed diaphoretics of the excitant class. If adapted for any form of the disease, it must be the chronic.

The iodide of potassium has been recommended, both internally<sup>a</sup> and externally,<sup>b</sup> and it is said to have rendered essential service.

<sup>a</sup> R.—Potass. iodid. ℥i.

Aquæ destillat. f℥i.—M.

Dose, ten or fifteen drops, three or four times a day.

<sup>b</sup> R.—Potass. iodid. ℥ss.

Adipis ℥j.—M.

Half a drachm, to be rubbed on the affected parts night and morning.

Owing to the predominance of lithic acid in the urine, Dr. T. Buckler, of Baltimore, under views given elsewhere—(see the article Gout and the author's *New Remedies*, 5th edit. p. 64, Philad. 1846)—has advised the phosphate of ammonia, in ten-grain doses, three times a day, dissolved in water, and, he says, with benefit. Much good

can scarcely, however, be expected from it, and it certainly has not been as serviceable as was expected by its proposer.

The treatment of acute rheumatism by large doses of nitrate of potassa, so highly advised in the last century by Dr. Brocklesby, has been revived, and it is said with much success,—from a quarter of an ounce to an ounce and a half being given dissolved in a large quantity of gruel in the course of the twenty-four hours; and the testimony in favour of it is by no means scanty; but—as elsewhere remarked—(*General Therapeutics and Materia Medica*, 3d edit. ii. 215, Philad. 1846,) it must be borne in mind that the disease is, in many instances, self-limited, or, in other words, appears to run a definite course greatly uninfluenced by treatment.

In regard to external applications to the affected parts, the author is not disposed to say much in their favour. “When the question,” says Dr. Latham, “is of the joints, it might be laid down as a maxim of practice to treat the rheumatism (or the general disease), and let the joints take care of themselves. But when the question is of the heart, the maxim might be stated conversely;—to treat the heart, and let the rheumatism take care of itself.” Advantage is, doubtless, derived, occasionally, from the application of leeches over the inflamed and tumefied surface. As to blisters, great difference of sentiment has existed. By Dr. Mackintosh it is affirmed, that blisters ought never to be employed, at least in the early stages, “unless there be evidence of pericarditis, or some other internal organ.” But even under the circumstances last mentioned, the propriety of applying blisters to the inflamed joint may be questionable, and the author may repeat here what he has said elsewhere, that he has over and over again attempted, by revellents, to bring back the changeable phlegmasiæ to their primary seat, when they have attacked other tissues, and yet he does not recollect, either in his own practice or in what he has witnessed in that of others—in public or in private—a solitary instance where such an appeal has been responded to; and, accordingly, he now attends exclusively to the superinduced affection; for in the cases of pericarditis and endocarditis, which are so often observed as concomitants of acute rheumatism, any loss of time might be serious. “It is, indeed—as the author has remarked elsewhere—(*op. cit.*, ii. 230) by no means clear, that the artificial irritation, which we excite by revulsives, can be practised, in such cases, with perfect impunity. We must bear in mind, that the inflammation, which has changed its seat, was originally situate in the part we desire to irritate artificially; and it might be asked, with much propriety, whether the revulsive irritation we induce may not equally pass to the organ secondarily implicated, and add to the mischief already existing; so that, in truth, revulsives might be less safe and efficacious there than when applied to other parts of the economy.”

Did doubts, indeed, exist in the mind of any practitioner, in regard to the use of blisters in arthritic affections, they would not be dispelled by consulting some of our therapeutical writers. Whilst Dr. Chapman, of Philadelphia, thinks—or rather thought—they are

calculated to fasten down arthritic affections on the extremities, Dr. Cullen affirms, that he has so frequently seen the most alarming translation of the inflammation to the vital organs, that he cannot too strongly denounce their employment. Both opinions appear to be hypothetical. In a recent work, indeed, Dr. Chapman makes no allusion to the opinion once entertained by him. On the contrary, when treating of the use of local agents in acute rheumatism, he remarks: "Our main reliance is to be placed on topical bleeding by leeches or cups, frequently renewed,—and next on repeated blisters." The author is not in the habit of prescribing blisters to surfaces affected with acute rheumatism; but he has often seen them so prescribed, and he has never witnessed either of the effects described; nor is he prepared to say that any advantages have accrued from their use to compensate for the irritation they have occasioned.

Emollient cataplasms and warm fomentations have been advised, but they are seldom useful; and although the warm-bath might appear to be indicated, evil results from the necessary motion of the joints which it requires. Cases, that have reduced the sufferers to the condition of cripples, and that have belonged to the subacute and chronic forms, have been wholly restored by prolonged immersion in a natural bath of the temperature of the body—like that at the Warm Springs, and the Hot Springs of Virginia. The artificial bath fails, in consequence of the impracticability of maintaining the water of the bath at the same elevated temperature.

Colchicum is sometimes applied externally to rheumatic joints as a liniment, in the form of the tincture of the seeds or bulb. It has been advised to be combined with tincture of camphor.<sup>a</sup> This combination has been used by the author with relief, but whether the colchicum were an important agent, he was unable to decide. Tincture of camphor, used alone, certainly seemed to exert the same effect.

<sup>a</sup> R.—Tinct. rad. colchic.  
Camphoræ, aa partes æquales.—M.

Painting the affected parts with tincture of iodine has likewise been found useful.

The application of methodical compression around the affected joints, by means of a flannel bandage, is often productive of great relief. It was advised, many years ago, and has been revived. It is especially serviceable when there is great effusion. It has been recommended, that the compression should be made by means of compresses covered with mercurial ointment; and that a position and attitude should be given to the limb that would be most favourable to resolution; and an elevated position would certainly tend to prevent the engorgement of the parts. The author has seen good effects from compression, and a simple flannel bandage is all-sufficient.

Lastly, the diet requires regulation throughout the disease. Whilst the antiphlogistic treatment is considered necessary, it should be directed according to the rules laid down under febrile and inflammatory affections in general, and, subsequently, it may be improved; but great caution is requisite on this head, as errors in diet are a very

common cause of the recurrence not only of this but of every febrile disorder that is liable to relapse.

When rheumatism is seated in the lining membrane of the joints and bursæ of the tendons, it is termed *capsular*. The parts most liable to its attacks are the feet and hands. It is recognised by the enlargement of the joints, which is circumscribed owing to the distension of the synovial capsule with fluid, and is thus distinguishable from the smaller and more diffused swelling of ordinary rheumatic fever. In its history, too, it differs generally, as Dr. Macleod has observed,—affecting several joints, but commonly becoming more especially fixed in a limited number, and ultimately localized, and in some cases inducing permanent changes of structure or disorganization.

When death occurs in the acute stage, the joints are found to contain an increased quantity of synovia; and if the disease has been more prolonged, distensions and nodosities are seen, similar to what occur in gout. Deposits are often found in such cases on the cartilages of the joint, which Dr. Macleod found to be urate of soda, as in gout. In cases of old synovial rheumatism, however, Dr. Chambers found them to consist of carbonate of lime. At times, suppuration has been observed in the joint; but these cases are rare.

Partial rheumatism of the joints, when of great intensity, is almost always of the capsular kind. This form of rheumatism is said to occur generally in persons of feeble or debilitated constitutions; or in the robust, after great and protracted mental or corporeal exertion. It is said, also, to supervene on gonorrhœa and other venereal affections, but in the latter case, almost exclusively, according to Dr. Macleod, “where long-continued courses of mercury have been adopted.” It is very rare for metastasis to take place to internal organs, and, when it does, it usually passes to the pleura or membranes of the brain, and proves fatal in a very high ratio.

Of 81 cases of capsular rheumatism, recorded by Dr. Macleod, 47 occurred in men, and 34 in women. These were much more equally diffused over the different periods of adult age than acute rheumatism, and much more prone to affect persons under 40 than genuine gout. At the same time it appeared to be more the disease of middle life than either rheumatic fever or muscular rheumatism,—from forty to forty-five years of age giving twenty-two out of eighty-one cases, or rather more than one-fourth, “which is a much larger proportion than holds good with respect to either of the others. The average duration of capsular rheumatism was found to be more than twice that of acute rheumatism.

The general treatment, both internal and external, is that recommended under rheumatism and gout.

#### *Dengue.*

SYNON. Dingee, Dunga, Dandy, Bouquet fever, Bucket fever, Rheumatismus febrilis, Scarlatina rheumatica, Exanthesis arthrosia, Plantaria, Febris exanthematica articularis, Eruptive articular fever, Eruptive rheumatic fever; *Fr.* Giraffe; *Ger.* Giraffenausschlag.

Some of the appellations given to this singular affection sufficiently

indicate the difference of sentiment that has existed in regard to its nature. The origin of its popular name appears to have been derived from the English negroes of the Island of St. Thomas, by whom it was called the "*Dandy fever*," owing to the stiff affected gait induced in those labouring under it. Such is the opinion of Professor Dickson, of New York, formerly of Charleston, who has furnished the main material for what has been since written on the subject. When the disease occurred in Cuba, the word *Dandy* was corrupted in Spanish pronunciation into *Dunga* or *Dengue*, by which it was known in the Southern States. It first made its appearance in the Caribbean Islands in the latter part of 1827, whence it spread over the West Indies, and, in the following year, to the southern coast of the United States. In the spring and autumn of that year, it appeared with severity in New Orleans, Pensacola, Savannah, Charleston, &c. At the close of the year 1828, it became gradually extinct, and has never since recurred. "In its brief duration"—as remarked by Dr. Dickson—"in the suddenness of its appearance, in the rapidity of its spread, and in its total subsequent extinction, offering a striking resemblance to the *Black Death* of the fourteenth century, and the *Sweating Sickness* of the sixteenth, and several other shapes of pestilence, which have at different points of time arisen and died away, scattering among the nations horror and affright. Happily, however," he adds, "as the record will show, it was much unlike these plagues in proportional mortality, bringing in its train infinitely less of danger and of death than of mere suffering."

**Diagnosis.**—The disease was generally ushered in by febrile symptoms of an inflammatory character, accompanied by a painful affection of the joints and muscles. On the second or third day, the fever declined, and with it the articular pain,—the attack terminating in a copious perspiration, occasionally attended with a rash or miliary eruption, which was esteemed, however, as only an incidental symptom. On the third or fourth day,—the fever having in the meantime intermitted,—more or less gastric disorder appeared, and on the fifth or sixth day, a cutaneous eruption, which resembled scarlatina more than measles, but was less confluent than either of those affections, and consisted of minute florid red papulæ, slightly elevated, and distributed in irregularly shaped patches, appearing first on the face and trunk, and spreading to the extremities. On the full development of the eruption, a second febrile exacerbation, with severe arthritic and muscular pains, occurred. After two or three days' duration, the eruption gradually disappeared, with some desquamation of the cuticle. In some cases, the lymphatic ganglions of the neck, groin and axilla remained swelled for a long period.

Dengue has by many been classed amongst the exanthemata; but it would appear to partake of the nature of both eruptive and arthritic fevers, hence some of its synonymes. It scarcely ever proved fatal, unless when complicated with accidental morbid conditions. Perhaps no form of disease is known, in which the proportion of deaths was smaller, compared with the numbers attacked. The aged were most severely handled,—remaining frequently infirm and debilitated, with

languor and emaciation. In the intemperate, it served to usher in formidable paroxysms of delirium tremens.

**Causes.**—It appears to have attacked all conditions and both sexes; so as to give rise to a question which always occurs in similar visitations,—whether its spread were owing to atmospheric causes or to contagion? It is affirmed by Dr. Dickson to have extended gradually from place to place, following the great routes of commercial intercourse, and not to have been influenced in its progress by season, locality, or atmospheric changes. He is disposed to regard it as contagious. The evidence, however, of its contagious nature has not been esteemed conclusive. Drs. Osgood and Lehman, who saw it at Cuba, were led to consider the specific cause of it and yellow fever to be the same,—the resulting disease being modified by certain peculiarities of circumstances not well explained; another, Dr. Waring, of Savannah, considers it to have been closely analogous to the “breakbone fever” of 1826, and the epidemic yellow fever of 1827, in that city. Still closer, according to Dr. Dickson, are the points of similarity which may be found in the history of the *breakbone fever* or remittent, described by Dr. Rush as prevailing in Philadelphia in the summer and autumn of 1780, and the epidemic of Calcutta and Berhampore, described by Dr. Mellis in 1824–5.

**Treatment.**—The lancet was generally found necessary during the inflammatory period; with cathartics and antiphlogistics. Anodynes were likewise required to allay the violence of the pain.

## 2. *Chronic Rheumatism.*

**SYNON.** Rheumatismus chronicus, Rh. vulgaris, Rh. inveteratus, Rh. habitualis, Rh. frigidus, Arthrodynia, Arthritis arthrodynia, Arthrosia chronica, Rheumatalgia; *Fr.* Rhumatisme chronique; *Ger.* Chronische, inveterirte, habituelle Rheumatismus, Langwierige Gliederreissen, Chronische Muskelfluss.

The chronic form of rheumatism is described by Dr. Marshall Hall as being frequently a sequel of the acute. This does not accord with the experience of the author. So far as his observation has gone, the subjects of acute rheumatism rarely suffer from the chronic form; and, on the other hand, persons who are constantly more or less crippled by chronic rheumatism may pass through life without suffering from the acute. Partly for this reason, chronic rheumatism has not been considered by some as a variety of the same disease as the acute, but rather as a form of neuralgia. The fact, however, that a permanent contraction of the limbs, and, at times, ankylosis of the joints sooner or later supervenes, shows that the fibrous and muscular tissues ultimately become involved. It so happens, however, that the treatment, which is appropriate for the one, is equally so for the other. There is usually not much difficulty in the diagnosis of these cases. The pain is fixed in the part, but there is no swelling or redness as in acute rheumatism. The affected limbs, in process of time, lose their power of motion, fall away, and lameness results; but the disease exists in all degrees. Usually, too, the muscles of the part become atrophied, partly perhaps from disease, and partly from disuse.

**MM.** Andral and Gavarret analyzed the blood of ten persons suf-

fering from chronic and subacute articular rheumatism. No peculiarly striking results were obtained. The proportion of fibrin in no instance exceeded 5.0; and in two cases was as low as 2.9 and 2.6. The blood corpuscles in one instance amounted to no less than 154.3; and the solid constituents to 259.1. In the other cases, the corpuscles were below the healthy average; whence—as before remarked—it has been concluded, that provided there are no other disturbing influences, as rheumatism loses its acute character, the blood gradually loses the specific characters of hyperinosis.

If the pains are not very acute, and the night's rest is not disturbed, the urine retains its healthy characters. Of 37 cases observed by M. Becquerel, it remained unaffected in 20; whilst in 17, it assumed the inflammatory type, and in 9 it threw down a spontaneous sediment.

Chronic rheumatism is very rarely seated internally, but it is stated by M. Andral, that it may affect the heart, stomach, intestines, or bladder. It is induced by the same exciting causes as the acute, but is relieved by warmth—as by that of the bed. Periostitis—induced by syphilis, mercury, or cold—may be mistaken for it; but periostitis is usually seated in the long or flat bones, and, in the former, between the joints. The pains, too—*osteocopi*—are exceedingly severe during the night. Still, there may be cases—as in rheumatism of the occipito-frontalis muscle—where doubt may exist, whether the affection be not really syphilitic.

The army medical statistics seem to show, that rheumatic affections are most common in the dry and cold atmosphere of the interior, at the posts north of lat. 39°, and remote from the ocean and inland seas, which are characterized by the great range of the thermometer, and by seasons that are strongly contrasted; and it has been properly remarked by Dr. Forry, that were cold, moisture, and sudden alternations of temperature powerful exciting causes, the highest ratio ought to occur on the New England coast, and the northern chain of lakes. Similar results appear to have been obtained by the British army statisticians.

**Treatment.**—It can rarely be necessary to bleed from the general system in chronic rheumatism; but should the pain be very severe, it may be important to apply leeches or cups over the affected part, and to repeat the operation should the symptoms indicate that this course is necessary. The sudorific plan of treatment is here more strongly indicated than in the acute form. There can be no danger of adding to febrile excitement, for none such exists. Accordingly, the stimulating diaphoretics have been given freely, especially guaiacum, alone, (*Guaiac. pulv. gr. x. or tinct. guaiac. ammon. fʒj.* every three hours,) or in combination with Dover's powder or sulphur,<sup>a</sup> or with colchicum,<sup>b</sup> and the hot infusion of eupatorium perfoliatum.<sup>c</sup>

<sup>a</sup> R.—Guaiac. pulv. gr. x.  
Ipecac. pulv. comp. gr. iij. vel  
Sulphuris gr. vj.—M.  
One to be taken every four hours.

<sup>b</sup> R.—Tinct. sem. colehic.  
Tinct. guaiac. aa fʒij.—M.  
Dose, thirty or forty drops, three times a day, or oftener.

<sup>c</sup> R.—Eupator. perfoliat. ʒj.  
Aq. bullient. Oj.

Dose, an ounce and a half to three ounces, every three or four hours.



The hot water is evidently, however, an important ingredient. This very day, the author has seen a case of chronic rheumatism, in which profuse diaphoresis was occasioned by the hot infusion of chamomile. The eupatorium was directed, but the article not being at hand, the chamomile was substituted.

Aconitia, delphinia, or veratria, may be administered, as advised under acute rheumatism; but more reliance is perhaps to be placed upon them when used in the form of friction, (page 289 of this vol.) These remedies were brought forward with too high pretensions, but they were undoubtedly beneficial at times. Unless, however, the friction occasioned a full development of the peculiar impressions caused by aconitia when rubbed on the skin, no benefit whatever was looked for from its employment; and it is remarked by Dr. Turnbull, that if there be the slightest abrasion of the skin, an application of such activity should not be resorted to, and that it should be carefully kept from coming in contact with the mucous membranes. A drachm or two of the tincture of aconite, rubbed on the affected part, has often afforded eminent relief. An aconite plaster has likewise been recommended lately. It may be made by evaporating four fluidounces of the tincture of aconite to about half a fluidounce, or until it becomes of the consistence of oil. This must be spread with a paint-brush upon a yard of adhesive plaster half a yard wide, and dried. The plaster may be cut of a convenient size and shape, and be applied to the part affected.

Cod-liver oil—*oleum jecoris aselli*—has been highly extolled by different writers. It may be given poured on coffee or lemon-juice, or a thin infusion of flaxseed, flavoured with lemon-peel, in the dose of one to three teaspoonfuls to as many tablespoonfuls daily; or in the form of emulsion.

R.—Ol. jecinoris aselli,  
Vini albi, aa f ʒiv.  
Acac. ʒj. fiat emulsio, cui adde  
Syrup. cort. aurant. f ʒj.—M.

Dose, two tablespoonfuls, two or three times a day, shaking the vial.

The author has never administered this oil, but Dr. Mackintosh says he has, and that he has seen it tried, and persevered in for some weeks at a time, without observing any benefit whatever from its use: he adds:—"I can only wish a few doses were exhibited to those gentlemen who have the patience to prescribe it for others."

The most useful agents—internal as well as external—belong to the class of revellents. Of these, certain diuretics, as *oleum terebinthinæ*, have been chiefly used, especially in lumbago and sciatica.

R.—Ol. terebinth. gtt. x.  
To be taken three times a day, in molasses.

Or, R.—Olei terebinth. rectific. f ʒss.  
Gum. acaciæ pulv.  
Sacchar. alb. aa ʒij.  
Aquæ menthæ f ʒiv.—M.

Dose, a tablespoonful, every two hours.

Cubebæ have likewise been recommended.

R.—Cubeb. pulv. ʒss.  
Mellis q. s. ut fiat electuarium.  
Dose, a teaspoonful, three or four times a day.

Or, R.—Ol. cubeb. gtt. x.—xij.  
To be taken three times a day in syrup.

When the disease exhibits any evidences of periodicity, it may be met by the ordinary antiperiodics—as sulphate of quinia and arsenic.

In chronic rheumatism, attended by rigidity of the joints from extravasations, Dr. Chapman recommends the protracted use of savin internally, until it affects the system as “evinced by a sense of warmth, itching or even an eruption before the disease begins to yield.” He commences with ten or fifteen grains of the powder, three times a day, gradually increasing the dose. Dr. Chapman adds, that it is peculiarly adapted for arresting absorption in marasmus of the muscles, which he admits “is not a little curious,” and in this admission all must accord with him. The author knows of no one who uses it. Of late, the phosphate of ammonia, in ten-grain doses three times a day, has been proposed by Dr. T. Buckler, of Baltimore; but subsequent experience has not appeared to sanction his recommendations. (See the author’s *New Remedies*, 5th edit. p. 63, Philad. 1846.)

It is in chronic rheumatism, that we employ with advantage every form of external revulsion,—the *linimentum ammoniæ*, *linimentum cantharidis*, and the various excitant liniments of the pharmacopœias; leeches; cupping—dry and with the scarificator; moxa, or caloric applied in the manner recommended by Dr. Corrigan under PARTIAL PARALYSIS, (vol. ii. p. 300,) and repeated as often as may be necessary; counterirritant lotions of ammonia; the ointment of tartarized antimony; <sup>a</sup> croton oil; <sup>b</sup> acupuncture, by which thirty out of 42 cases were cured in St. Thomas’s Hospital; electropuncture; the magnet; galvanism; electricity; electro-magnetism; the hot bath; the vapour bath; the sulphurous fume bath; chlorine fumigations, sinapisms, &c. &c.

<sup>a</sup> R.—Antim. et potass. tart. ʒj.  
Adipis ʒvij.—M.

<sup>b</sup> R.—Ol. tiglii p. i.  
—olivæ p. ij.—M.

In various rheumatic affections of the joints, especially of the chronic kind, Dr. R. B. Todd employed, with unquestionable benefit, the local application of iodine to the affected joints,—both in the form of the tincture, and of a stronger compound, used at King’s College Hospital, under the name of “*Iodine Paint*,” and which is composed of 64 grains of iodine; 30 of iodide of potassium; and a fluidounce of alcohol. The mode of application is to paint the part freely by means of a camel’s hair pencil. More or less smarting is produced, and frequently vesication, or an herpetic eruption. The painting may be repeated as often as circumstances demand. Dr. Todd considers it to be extremely useful, when effusion has taken place into synovial membranes or sheaths. In painful, swollen and contracted joints depending on rheumatism or other causes, Dr. A. T. Thomson has found the topical application of muriate or acetate of morphia to a blistered surface over the affected joint capable of reducing the swelling, abating pain, and restoring the motion of the joints.

Hot springs—like those so called in Virginia—have effected cures, after every other remedy had failed; and the Russian vapour bath has been equally successful. Every hospital ought to be provided with an apparatus for fumigating, and for the application of steam; and it is not creditable to the members of the regular profession, that

they have not used more extensively, in this and congenerous diseases, an agency so potent as that of "steaming," when judiciously employed.

Throughout the affection, the patient should be encased in flannel; and the use of the flesh-brush should be enjoined. Everything, indeed, that can diffuse action over the surface, and thus produce an equalizing effect, is advantageous.

There are two forms of chronic rheumatism or neuralgia, according to some,—of acute rheumatism, according to others,—which are worthy of a few observations. These are lumbago and sciatica; both of which affections do certainly assume, at times, almost all the characters of the acute disease; whilst, at others, they are of long duration, and of less severity.

#### a. *Lumbago.*

SYNON. *Arthrosia acuta lumborum, Lumbago rheumatica, Nephralgia rheumatica, Osphyr-rheuma; Ger. Lendenschmerz, Lendenweh, Lendenfluss.*

This is sometimes attended with very acute symptoms, although rarely with the same phenomena as acute articular rheumatism. The pain is deep-seated, and there is no redness or tumefaction of the lumbar region. The most excruciating suffering is induced by change of posture, and as all the efforts of the body are concentrated in the loins, it is difficult to move any part without adding to the pain.

#### b. *Sciatica.*

SYNON. *Arthrosia acuta coxendicis, Ischias, I. rheumatica seu rheumaticum, Ischiadum Malum, Ischialgia, Ischias seu Sciatica nervosa, Neuralgia ischiadica, N. sciatica, N. femoro-poplitea, Dolor ischiadicus nervosus, Coxalgia, (of some,) Morbus coxarius (of some); Fr. Sciatique, Névralgie femoro-poplitée; Ger. Hüftweh, nervöse Hüftweh.*

This affection—which was formerly classed with lumbago amongst the rheumatisms, and still is by many—may, like the latter, be acute, but it is more frequently chronic. It is characterized by excruciating pain in the region of the hip, which shoots generally along the sciatic nerve to the ham, and hence is decidedly neuralgic in its character.

**Treatment of Lumbago and Sciatica.**—Both the above affections are relieved by the general plan of treatment advised under chronic rheumatism. Great advantage is derived in the more acute attacks from cupping the parts freely, and repeating the operation again and again, should the symptoms suggest it. In sciatica, revellent diuretics—as turpentine—have been supposed by some to be more efficacious than in any other form of rheumatism. They may be given, however, advantageously in all. Acupuncturation, and inoculation with the salts of morphia, as well as strong counterirritant lotions of ammonia, have been more used in the affections of these than of other localities, and frictions over the affected nerve with narcotic liniments, or ointments, have proved successful in some cases where other internal and external agents had been employed in vain.

R.—Extract Belladon. p. i.  
Adipis p. ij.—M.

Every form of chronic rheumatism demands the same great general principles of management, with variations according to the judgment of the practitioner. The disease may attack any muscular structure, and one form of counterirritant may be more easily applied than another. It may be remarked, however, that those revellents, which act suddenly and powerfully on the part, often succeed in severe cases of deep-seated pain, after the ordinary revellents have entirely failed. Hence it is, that moxa, ammoniated counterirritants, the dropping of water as hot as it can be borne, on the part, and electro-magnetic shocks, have succeeded in many painful cases.

When the disease has been removed, great caution is needed to prevent a relapse. Woollen clothing next the skin; attention to diet, and avoiding all partial and irregular exposures, are measures that must not be neglected; and if they be attended to, it matters but little, whether heed be paid to the recommendation by Dr. Mackintosh, contained in the following paragraph: "It is said that individuals previously liable to attacks of lumbago and sciatica have escaped further annoyance by wearing a piece of stick-sulphur in their breeches pockets, and it is well known, that the internal use of sulphur is a popular remedy for all forms of rheumatic complaints." So long as the wearing of this amulet does not prevent the adoption of other means of prophylaxis it is good and well: of itself it would scarcely appear to be capable of any energetic action.

Numerous cases have been published of the highly beneficial effects of the iodide of potassium, (*Liq. potassii iodid. gtt. x. three times a day*), gradually augmenting the dose, and persevering with it for a considerable period. Under its revellent action, lumbago and sciatica and other forms of rheumatism have yielded, which had resisted all other remedies. (*New Remedies*, edit. cit. p. 410.)

Where there is reason to believe the sciatica to be gouty, the preparations of colchicum are regarded by Dr. Seymour as of great importance; along with sulphate of quinia in large doses.

*c. Rheumatism of the anterior and lateral parietes of the Abdomen.*

Lumbago means rheumatism of the posterior parietes of the abdomen. A few remarks are needed on what M. Réquin terms *Rhumatisme pré-abdominal*, or, in other words, on rheumatism of the muscles of the anterior and lateral parietes of the abdomen. Its consideration is of the more moment, as MM. Genest and Réquin are of opinion, that the *nervous affection of the peritoneum*, described by Dr. Gooch, must be referred to præabdominal rheumatism. The following is an epitome of the disease as given by M. Grisolle.

Præabdominal rheumatism, when in all its violence, is one of the most painful affections of the abdomen: pressure almost always exasperates it, and the patient frequently cannot bear the weight of the bedclothes. The pains become extremely violent when the patient makes any effort to go to stool, and especially when he endeavours to change his position, and assumes the sitting posture;—or, in other words, when he attempts to contract the affected muscles. Hence he remains immovable on the back. There is neither nausea, nor

vomiting, nor meteorism; the abdomen preserves nearly its shape, but is hard, owing to the tension of the muscles, which are sometimes seen well-marked under the skin. In the midst of all the sufferings, the countenance may be almost natural; most commonly it is more or less altered; but the patient is always without fever. This character, combined with the absence of hiccough, and vomiting, and meteorism, it is considered, will readily enable præ-abdominal rheumatism to be distinguished from peritonitis. Moreover, in inflammation of the peritoneum, or of the abdominal viscera, the pain is always exasperated by pressure; whilst, in the rheumatic affection, the exasperation is occasioned mainly by the contraction of the implicated muscles.

This form of rheumatism is sometimes transient;—passing off, at times, to recur. Occasionally, however, it is extremely obstinate. In cases of violent dysentery, the author has seen great aggravation of the suffering occasioned by the affection of the muscles;—which, in more than one instance, has been mistaken for peritonitis. It can be readily understood, that the violent contraction of the abdominal muscles during parturition may lay the foundation for it.

**Treatment.**—The appropriate treatment is the abstraction of blood locally, the warm-bath, or warm fomentations; and, if necessary, blisters. Full doses of opiates, however, afford the most striking relief. The bowels must, of course, be properly regulated, and, for this purpose, calomel may be associated with the opium; or some of the ordinary cathartics or enemata be prescribed.

#### d. *Rheumatism of the Head.*

Rheumatism not unfrequently attacks the occipito-frontalis muscle; and is indicated by pain upon pressure, and upon attempts to move the muscle. It is distinguished from erysipelas by the absence of all appearance of inflammation of the skin; and from ordinary neuralgia by the pain not shooting along any nervous trunk. As the pain is often aggravated in the night, it may be thought to be syphilitic; and great difficulty exists, at times, in arriving at any positive decision. In periostitis, however, there is usually some deposition. Where doubt exists after a full examination, and in obstinate cases, it may be well to place the patient upon an antisiphilitic treatment.

**Treatment.**—The common treatment for rheumatism is required here. The author has found advantage from shaving the head, and blistering, or applying the tincture of iodine to it.

Rheumatism may affect separate muscles of the head—as one of the temporals, so that mastication becomes difficult,—or the muscles of the eye, so as to induce RHEUMATIC OPHTHALMIA, (see vol. i. p. 318.) or those of the tongue, of which Morgagni mentions cases.

#### e. *Rheumatism of the Neck; "Crick in the Neck."*

Stiff neck, from cold, is a common rheumatic affection. It is seated in the muscles of the neck, and especially in the sterno-cleido-mastoideus. Occasionally, it is caused by a cramped position assumed during sleep. The neck is twisted, as it were, the head turned towards the affected side, and the most painful effects are induced by attempts

at turning it. The muscle affected is painful to the touch, hard, and contracted. The affection is exceedingly painful, and inconvenient, but generally passes off in a few days. It may, however, end in wry-neck, or in permanent contraction and malposition of parts.

**Treatment.**—One of the best remedies is the application of caloric to the part; which may be done by means of a flannel placed upon it, and a common clothes-iron passed over this as hot as the patient can bear it. The usual treatment is by the ordinary excitant liniments, or by anodyne frictions, or warm fomentations,—covering the part with flannel.

The author has met with several cases of rheumatism of other muscles of the neck, and especially of the stylo-pharyngæus, which has been attended with a good deal of pain on deglutition. It has rarely persisted more than a few days, and has been benefited by counterirritant applications.

#### f. Rheumatism of the Diaphragm.

This affection occasionally supervenes on acute rheumatism, and is very painful. More frequently, however, it is more chronic in its character, and consists of a dull pain, which extends from the cartilagoensiformis, and lower extremity of the sternum, to the spine. A somewhat deep inspiration augments the pain, which causes much distress, as indicated by lowness of spirits, and an anxious expression of countenance. A moderate meal occasions suffering, which may continue for hours. The affection may persist for weeks or even months; after which it may subside, leaving a great tendency to relapse. The action of the heart is described as being generally turbulent, so that it has been mistaken for disease of that organ. It has been observed most frequently in males of a nervous, and more particularly in females of an hysterical, habit.

Rest in bed; warm diluent drinks; purgative counterirritants; opiates in full doses, and sulphate of quinia, constitute the mode of management.

#### g. Rheumatism of the Skin.

Under the name *rheumatic dermalgia*, M. Beau has described an affection characterized by the following phenomena. The head and lower extremities are the parts most usually attacked, but the pain does not remain in one place, often changing its seat gradually, and wandering from place to place. Two kinds of pain are experienced: the one enduring; the other intermittent and severe, resembling the prick of a pin or an electric shock, and recurring about every half minute. The enduring pain, is often little more than an exaltation of the natural sensibility of the skin. Friction of the part with the finger, or with the patient's dress, always augments the pain; and if there be hair on the affected part, very severe suffering may be produced by passing the hand over the hair.

Rheumatism of the skin commonly alternates with that form of the disease, which affects the muscular and fibrous tissues. Its usual duration is a day or two; after which it gradually subsides. It is said to be a more frequent occurrence among men, than women; to be in-

duced by damp cold, and the ordinary causes of rheumatism; and, in general, not to require much treatment.

Rheumatism of the muscles of the chest, and of the uterus, have been described elsewhere—(vol. i. p. 449, and vol. ii. p. 392).

Under chronic rheumatism, Dr. Chapman, of Philadelphia, has described an affection, which is manifestly spinal: "Marasmus of the muscles"—he says—"takes place occasionally without any appreciable rheumatism, or if such attacks as I allude to are of this nature, they must be of the kind vulgarly called *dumb rheumatism*—devoid of expression by symptoms. The disease mostly comes on with no premonition; sometimes, when the individual seems to be in good health; and the first indication of it is the obvious wasting of one or more of the large muscles, usually those of the neck, or back, or hips, with corresponding imperfection in the motions dependent on these muscles. Gradually, other muscles become involved to a greater or less extent, and emaciation proceeds in them till it is extreme, and all sorts of distortions and deformities are exhibited. For a long period the general system seems to sustain little or no detriment from this morbid process, and, what is particularly remarkable, the digestive functions are, to all appearance, actively performed. But ultimately it is different, and febrile irritation arising, with an aggravation of condition, the result is rapidly hastened. Five cases of this extraordinary affection I have seen, all brought to me from the country, the whole of which ended disastrously. Three of these were brothers, and the fourth, a nephew of them, is now under the care of Drs. Jackson, Mitchell, and myself, and I have heard that another member of the same connexion has been similarly afflicted."

All these cases began to be developed about the period of puberty, and ran on to that of manhood.

## II. GOUT.

SYNON. Arthritis, Arthragra, Arthrosia podagra, Podalgia, Podagra, Arthritis podagra, Podagra arthritis; *Fr.* Goutte; *Ger.* Gicht, Gliedersucht, Gliederweh, Zipperlein.

Gout is a disease greatly resembling rheumatism; and, notwithstanding, differing from it in many essential particulars. In the joints, it appears to attack the same structures, and, like acute articular rheumatism—indeed more strongly than it—shifts its seat frequently and rapidly, so that, in a few hours after a joint has been greatly inflamed and tumefied, there may be no signs of the previous phlegmasia remaining; whilst another joint, not previously affected, may have assumed the inflammatory process. The reasons, consequently, which lead to the inference, that acute rheumatism is a mixed neuropathic and inflammatory disease, apply still more forcibly to gout.

In the difficulty of comprehending the strange nature of gout, the wildest hypotheses have been entertained. It has been presumed, that certain secretions are transferred to the joints *guttatim*, as it were, and hence its name; which, although founded in barbarous pathology, is now so universally received, that it would subject us to more inconvenience to remove, than there is evil in retaining, it. In like manner,

authors have differed much in regard to the varieties of gout: they may all, perhaps, be conveniently considered, under the heads of the *acute*, the *chronic*, the *retrocedent*, and the *rheumatic*.

### 1. *Acute Gout.*

SYNON. Arthritis acuta seu vera seu genuina seu normalis, Arthragra legitima, Arthrosia podagra regularis, Podagra regularis; *Fr.* Goutte inflammatoire, G. articulaire, G. régulière, G. fixe; *Ger.* Oertliche Gelenkgicht, Acute Gelenkgicht, Normale Gicht, Wahre eigentliche Gicht.

It has been a common remark, that gout, as it occurs in different persons, and even in the same person at different times, is a disease of such varied appearance, that it is difficult to render the history of it complete and exact, or to give a character of it that will apply universally. This is true as regards chronic gout, as the author knows from unhappy experience; but it does not apply to what is termed a regular paroxysm or fit, which can scarcely be mistaken.

The prodromic or precursory signs of a paroxysm are generally marked. Almost always, there is more or less disorder of the digestive function, with pains flying here and there; more or less drowsiness, vertigo, and palpitation or altered rhythm of the heart's action. An indescribable restlessness is also experienced in many cases, which completely prevents the patient from sleeping. The signs, however, that precede the attack are exceedingly various: indeed, there is no disease, which is more Protean in its character. It would be idle to attempt to enumerate all these. Commonly, they are referable to the gastro-intestinal function; but, at times, one of the first evidences of an approaching paroxysm may be exhibited in the urinary organs. In the author's own case, severe nephralgia, induced by the passage of a small lithic acid deposition, not uncommonly precedes the fit; and the moment this is relieved, the attack commences in the joint of the toe.

They, who have had one attack of gout, can generally prognosticate, with some degree of accuracy, from their feelings, that another approaches; but at times, and especially in the first fit, the immediate invasion of the disease is not preceded by any warning. This has been doubted, and it has been affirmed, that the warning probably existed, but was not heeded; but there is no doubt, that a paroxysm of acute gout may supervene very suddenly, and occasionally, very unexpectedly, in the midst of robust health; nay, it is affirmed by M. Andral, that almost always, on the evening before the attack, the patient has a better appetite, and unusual feelings of health. At times, the disease begins in the back or hip, in the form of severe lumbar or sciatic neuralgia, which is removed by an attack of regular gout. These anomalous pains have been classed as *gouty neuralgia*.

After the precursory symptoms have existed for a longer or shorter period, pain is experienced, generally in the phalango-metatarsal region of the great toe, but sometimes in other joints, especially the ankle, wrist, &c. The pain is said to take place more frequently in the night or early in the morning,—the patient being, at times, aroused from a tranquil sleep by its violence; but this scarcely accords with the results of the author's observation. The pain has generally, in the cases he



has witnessed, been perceived before retiring to rest; and, like acute rheumatism, it is subject to marked aggravation in the course of the night. It is very severe, and has been properly compared to that which might be produced by the gnawing of an animal. The part throbs violently, and no ease can be obtained by any change of position:—at the same time it becomes intensely red, very tender to the touch, and, in the course of a few hours, is much swollen. These symptoms rarely reach their height before the expiration of thirty-six hours, after which the swelling begins gradually to decline, generally pits on pressure, and its subsidence is followed by desquamation of the cuticle. Along with the occurrence of the pain, symptoms of constitutional disturbance present themselves,—if they had not existed previously; or if they had, they now become more marked. Sometimes, chilliness is felt; and occasionally, for successive nights, severe rigors are experienced on first getting into bed. The skin subsequently becomes hot and dry; but generally, after these rigors, a profuse perspiration, which has an acid smell—lactic acid (?)—is established, and puts an end to the febrile exacerbation. On the following night, the pain, which had become more moderate during the day, is commonly greatly aggravated, so that it completely prevents sleep; towards the morning, however, it generally becomes mitigated, a perspiration breaks out, and the patient sleeps. Every evening, for some days, the same kind of aggravation of the suffering recurs, but to a less degree; and in the course of five or six days—sooner or later—it ceases altogether, and the paroxysm is at an end.

The urine, not only before, but also during, the paroxysm is at times scanty and high-coloured, and produces irritation in the bladder and heat in the urethra, with frequent desire to void it. A copious sediment of lithic acid or of the lithates is deposited; and, as the inflammatory symptoms subside, the urine loses these characters, and by degrees ceases to deposit the lateritious sediment, which previously fell from it; and, in its place, there is a whitish deposit, as if, according to Dr. Mackintosh, the urine were mixed with a small quantity of chalk or magnesia. It is proper, too, to remark, that although there may be frequently—perhaps generally—a predominance of lithic acid in gout, it is by no means clear, that the disease is dependent upon contamination of the blood with undischarged urea and lithic acid, as has been maintained by many. There is reason, indeed, to believe, with Messrs. Ballard and Garrod, that the view perhaps rests wholly on hypothetical grounds. Phosphatic deposits are, indeed, often observed in conjunction with gouty affections; and in many instances—it would seem—the tophaceous concretions contain no urate of soda, but in its stead phosphate of lime. In numerous cases, too, the phosphatic diathesis is manifest.

Both before, and during an attack, the nervous system is evidently greatly deranged; and its impressibility is evinced by irritability of temper, intensity of pain, cramps, and the sudden translation of the disease from one joint to another.

After a paroxysm has terminated, the individual is by no means left in a state of health in all cases. There may, indeed, be a succession of paroxysms for weeks before the disease finally yields. Generally,

however, he remains in a state of imperfect health, with a persistence of those phenomena that have already been described as prodromic, and more or less pain and lameness, either in the joints of the toes, or in the ankle, knee, elbow, wrist, or fingers. This gradually passes away, and if he be placed under favourable circumstances, he may be speedily restored. Occasionally, the gouty valetudinarian flatters himself, that the paroxysm has improved his health; and where the disease has been preceded by protracted dyspepsia and its congenerous phenomena, the patient often feels himself better, and more vigorous, than he may have done for weeks or months previously. At first, the attacks rarely recur except at long periods,—one or two years or even longer, for example; but the intervals between the subsequent paroxysms usually become shorter and shorter, until, ultimately, life may be rendered almost insupportable. The paroxysms themselves, too, generally become more and more protracted.

## 2. *Chronic Gout.*

SYNON. *Arthritis chronica seu atonica seu fixa seu organica, Arthrosia podagra larvata, Podagra atonica, P. irregularis, Disguised, lurking, atonic gout; Fr. Goutte irregulière, G. athénique, G. consécutive; Ger. Chronische, desorganisirende, zerstörende Gelenkgicht.*

By “chronic gout” is meant the morbid condition in which the patient is left after repeated attacks of the acute form; or a similar catenation of phenomena may exist where no acute attack has been experienced. The joints are liable, alternately, to stiffness and lameness; and the phlegmasia is never very active; but the functions of the body generally are apt to be greatly disordered; and the temper becomes irritable, so that, as was remarked by a distinguished writer—himself a sufferer—every paroxysm may be as justly denominated a fit of anger as a fit of the gout. To this result, however, there are numerous exceptions. Some individuals, of buoyant dispositions, remain unruffled, and only lose their equanimity during the violence of a paroxysm, and not even then.

If the prodromic symptoms of acute gout be Protean, the remark applies with still more force to the concomitant phenomena in chronic gout. Indeed, every uneasy feeling under which a patient may labour, who has had a decided attack or attacks of gout, or who considers that he is entitled to it, is apt to be ascribed to this *vice* in his constitution, and is referred to *masked* or *anomalous gout, Arthragra anomala, Arthritis larvata seu retenta; Fr. Goutte larvée; Ger. Anomale Gicht.* Disorders of every kind of the digestive function prevail; the rest is disturbed, without any assignable cause; the heart’s action is irregular; sometimes violent palpitations are felt, and pulsations in the course of the abdominal aorta; at other times, the pulse loses a beat; and the intermission is indicated by an indescribable feeling in the epigastric region, which partially incites to cough; anomalous pains and uneasiness may exist in the rectum, which have been ascribed, in many cases, to an enlarged and painful condition of the hemorrhoidal veins: these occasionally discharge blood in considerable quantity. The urine generally deposits the lithates or lithic acid, and when the health suffers, phosphatic depositions not unfrequently take place. Chronic cough and

expectoration sometimes exist; almost always, the encephalic functions suffer more or less; and, in addition to the common deterioration of temper, more or less giddiness, sometimes to such a degree as to endanger falling, with depravations of vision, as *muscæ volitantes*, accompany the dyspeptic, and often hypochondriacal, symptoms.

In such a state, it is obvious that danger arises from the supervention of structural derangement in some important internal organ. Acute gout seizes hold of one or more articulations, is excessively painful, but runs its course in a few days. Chronic gout, on the other hand, has no definite duration, and although the suffering in equal periods is much less in it than in the acute form, it is extended over a much longer time, and flies from joint to joint, or from a joint to some internal organ, constituting the *Arthritis vaga*, *A. erratica*, *A. nervosa*, *A. debilitorum*; Fr. *Goutte vague*; Ger. *Wandernde, herumziehende Gicht, Wandernde Gelenkgicht*, of writers.

Repeated attacks of acute—and still more, perhaps, of chronic—gout give rise to structural changes about the joints; so that pain, tumefaction, weakness, deformity, distortion, and ankylosis, may be the ultimate result. The author has seen distressing cases, in which the individuals have been crippled in most of the joints; and those of the hands and feet have been rendered wholly useless. In a few cases, and in persons of particular gouty idiosyncrasy, small tumours form, especially around the smaller joints, which are at first soft and tender to the touch, but soon lose these qualities, and become calcareous or tophaceous depositions. These depositions, in rare cases, give occasion to ulceration and to fistulous openings, through which they are discharged. They are termed, in common parlance, “chalk-stones,”—in technical language, *Tophi, Tubercula arthritica*; Fr. *Nœuds*; Ger. *Gichtknoten*; and the form of gout, in which they are seen, is sometimes distinguished by the names, *Arthritis nodosa*; Fr. *Goutte noueuse*. These concretions consist chiefly of lithic acid and soda, or of lithate of soda and phosphate of lime. They are found in various situations, from within the synovial membrane of the joint to the layers of the cutis. “I have found them,”—says Sir C. Scudamore—“in the living subject, filling the bursæ, and condensed to great hardness; in the sheaths of tendons, feeling almost stony; in the cellular membrane, either in hard or soft lumps: and under the cuticle, pressing for escape. In one gouty person, who comes under my frequent observation, the concretions near the surface have caused numerous ulcerations both in the hands and feet, and the chalk-like matter is constantly secreted.”

Some years ago the author saw a distressing case of this form of gout. The chalk-stones had formed at the expense of the fingers, and escaped, until, ultimately, the nails appeared as if projecting from the metatarsal bones.

### 3. *Retrocedent Gout.*

SYNON. *Arthritis retrograda, A. retro pulsa, Arthrosia podagra complicata, Podagra complicata, P. retrograda, P. aberrans, Metastasis arthritica, Retrograde, recedent, misplaced Gout*; Fr. *Goutte malplacée*; Ger. *Zurückgetretene Gicht, Gichtmetastase*.

In gout, as in acute rheumatism, it occasionally happens, that the

inflammation appears to recede suddenly, or to become materially relieved, and symptoms present themselves, which lead to the inference, that the gout has attacked some internal organ. The patient may be affected with stupor, coma, or with delirium, intense cephalalgia, &c., leading to the suspicion of apoplexy or encephalitis; or unequivocal indications may present themselves of pulmonary or cardiac inflammation, or of gastritis, hepatitis, enteritis of the peritoneal or of the mucous coat, or peritonitis proper, or cystitis. Sir C. Scudamore thinks the transference is most disposed to be made to the stomach or intestines, or to both in succession; the symptoms being—exquisite pain and spasm, with vomiting. “If the intestines be more distinctly affected, enteritis, in its worst form, is produced; and vomiting, which is a usual attendant, is more or less urgent, according as the seat of the disease is near or distant from the stomach. In either case, the danger is pressing, and unless relief be speedily rendered, death soon closes the scene.”

Although we constantly hear of persons dying of gout in the stomach, gout in the head, &c., it must be admitted with Dr. Mackintosh, that unless from some rash practice, as exposure to wet and cold, whilst labouring under a paroxysm, or from some imprudence on the part of the patient, such sudden translations of the inflammation, during the paroxysm of gout, are amongst the rarest occurrences to be met with in practice, unless, indeed, there has been previous disease in the organ to which translation takes place. In such case, too, it may be a question, whether the mischief in the internal organ be in reality arthritic; or whether, in the highly impressible state of the system that exists during a paroxysm of gout, disturbing influences may not have induced ordinary phlegmasia in an organ predisposed, at the time, to assume it. Certain it is, that it is proper to regard it practically in this last light, and to treat the intercurrent phlegmasia as if it were primary, and dependent upon ordinary causes. This is the plan, already advised in acute rheumatism, and in the changeable phlegmasiæ that have already fallen under consideration.

#### 4. *Rheumatic Gout.*

**SYNON.** Arthritis rheumatica, A. juvenilis, Rheumarthrosis, Rhenmarthritis, Rheumatismus articulationum; *Ger.* Gelenkfluss, Gelenkrheumatismus, Rheumatische Gicht, Gicht der jungen Leute.

An apparent combination of gout and rheumatism exists at times, to which, when the gout appears to predominate, the name *Rheumatic gout*,—when rheumatism, *Rheumatalgia arthritica*,—is given. The author has under his care a poor female, the joints of whose fingers are swollen and painful; the affection remaining for a time in one hand, and then leaving it and attacking the other: but the evidence of previous disease—as tumefaction, difficulty of moving the joints, and evident morbid deposition, still remain. Now, if this affection had occurred in one who had been subject to attacks of gout, it would most certainly have been ascribed to that disease, and to the chronic form. It is owing, indeed, to the difficulty in deciding, in such cases, whether the disease belong to rheumatism or to gout, or to a com-

bination of both, that the division of "rheumatic gout" has been established. Most cases probably belong to capsular rheumatism already considered.

The following table by Dr. Mackin—which is in the main accurate—will aid us in the differential diagnosis of rheumatism and gout.

*Gout.*

1. Is rare in females, who, indeed, are seldom attacked by the disease in a strict and uncomplicated form.
2. Is scarcely ever seen prior to the age of manhood.
3. Is generally, although not always, induced by high living, free indulgence at the table, &c.
4. Is hereditary, descending from father to son, sometimes missing one generation.
5. Affects the smaller joints, although the larger are often attacked. The parts abounding in fibrous tissues, as the sole of the foot, are seldom attacked by true gout.
6. Less frequently becomes chronic.
7. Subsequent to the paroxysm the patient is improved in general health, that is, comparatively.
8. Metastasis to other joints (common), to the stomach (frequent), to the membranes of the brain (rare), to the pericardium (scarcely ever).
9. Cornea the most frequent seat of gouty inflammation of the eye.
10. Localization of gout not preceded by rigors.

*Acute Rheumatism.*

1. Is frequent among females, especially those who are necessarily exposed to its causes.
2. Is common to all stages of life, except perhaps infancy.
3. Is more frequent among the lower orders, and those to whom poverty and privation are familiar.
4. Is not hereditary—at least not obviously so.
5. Affects the larger joints and fibrous tissues.
6. Has a great tendency to become chronic.
7. Subsequent amelioration not so evident.
8. Metastasis to other joints (always), to the stomach (rare), to membranes of the brain (frequent), to the pericardium (very common).
9. Rheumatism chiefly attacks the sclerotic coat.
10. Rheumatic arthritis generally preceded by rigors.

Gout, too, frequently induces tophaceous deposits in the joint; rheumatism never.

The alternation or coexistence of gout and gravel is one of the most marked circumstances attending these affections, and strikingly exhibits their congenerous character; this, indeed, is shown by the tophaceous concretions of gout, which, as already remarked, contain, in all cases, lithic or uric acid. The gouty diathesis or cachexia is, indeed, regarded by Dr. R. B. Todd as little more than an aggravated lithic acid diathesis.

**Causes of Gout.**—There can be little doubt, that the disease is hereditary,—in other words, that in the first admixture of the materials furnished at a fecundating union, an impulse exists to an organization, which favours the development of the disease at a certain period of life, under the action of adequate exciting influences;—hence, that a predisposition to it is laid in organization. The observation of certain individuals has satisfied them, however, that the disease is more frequently acquired than hereditary. Of one hundred and thirteen patients, according to Sir C. Scudamore, 32 acquired the predisposition from the father; 9 from the mother; and 3 from the father and mother; in 6, the grandfather only had it, the disease entirely skipping

over one generation; in 1, the grandmother only; in 3, the uncle only; in 1, the aunt only; and in 58 cases it was not known either on the father's or mother's side. There can be no doubt, that the disease is often said to be hereditary when it is acquired, for there are many, who are unwilling to admit, that their habits are of such a character as to engender it. On the other hand, there are also many who are proud to have it supposed, that their ancestors were liable to it. "What is a consolation to me," observed Sydenham, "and may be so to other *gouty* persons of small fortunes and slender abilities, is, that kings, princes, generals, admirals, philosophers and several other great men, have thus lived and died. In short, it may in a more special manner be affirmed of the disease, that it destroys more rich than poorer persons, and more wise men than fools." These facts, and another of an analogous character, that gout is rarely seen in hospital practice, show, that there are circumstances, connected with the regimen of the rich, that must predispose to it: these probably consist in too great indulgence in nutritious aliment and wine, associated with insufficient exercise. The habit of taking great variety of food, and that food consisting of rich-made dishes, lays the foundation of ordinary dyspepsia; and when, along with this, port wine or Madeira is taken freely and habitually, a condition of the system may be induced, which constitutes the *gouty* diathesis.

An intelligent writer, Dr. W. Budd, is disposed to think—and the observation of the author leads him to the same belief—that malt liquors tend, even more than wine, to produce a *gouty* diathesis, and the evidence, which he adduces on this subject, is striking. There is a body of men employed on the Thames, whose occupation it is to raise ballast from the bottom of the river. As this can be done only when the tide is ebbing, their hours of labour are regulated by that circumstance, and vary through every period of night and day. They work under great exposure to inclemencies of weather; their occupation requires great bodily exertion, occasioning profuse sweating and much exhaustion. In consideration of this, their allowance of liquor is very large; each man drinks from two to three gallons of porter daily, and generally a considerable quantity of spirit besides. This immoderate consumption of liquors is said to form the only exception, as far as relates to food, which these men offer to the general habits of the lower classes in London. Gout is remarkably frequent amongst them, and although not a numerous body, many of them are every year admitted to the Seaman's Hospital Ship affected with that disease. "This"—as Dr. Budd has remarked, "is a very interesting fact, and seems to show, that no amount of bodily exertion is adequate to counteract the influence of large quantities of porter; the exposure of ballasters to wet and changes of temperature probably favours its operation. These men are almost all derived from the peasantry of Ireland; they can rarely, therefore, inherit a disposition to gout."

Age, unquestionably, has an influence on the development of this diathesis. It is extremely rare before the period of puberty: Sir C. Scudamore asserts, that he has not witnessed more than one example

of a first attack before 20; nor any after 65. It is much more uncommon amongst females than males, but it occasionally presents itself severely in the former. The cause of their immunity probably resides in their being less exposed to the ordinary exciting causes. The idea of M. Andral, that it is "doubtless ascribable in part to their menstrual evacuations," would seem to be hypothetical.

Warm climates do not favour its development. This has been particularly noticed in those who have left the temperate regions to reside in the torrid zone, and who have been subject to this affection. They have generally long intervals between the fits; and these, when they do occur, are usually slight.

As to the over-exertion of the brain in literary labours being a cause of gout, all the author's experience has been in the negative. It is not over-action of the brain that is injurious, but the ordinary concomitants—as irregularity in regard to meals, want of exercise, sitting up late at night, &c. &c. Where a person is predisposed to attacks of gout, excessive fatigue or reduction of any kind is a common cause of a paroxysm; hence, it follows long watching, great anxiety, excessive discharges, &c.; and a great mistake is often committed by the gouty, in keeping the system too low; whilst it must be admitted, that the opposite extreme is more frequently to be deprecated. Where the predisposition to gout is very strong, disorder of the stomach, especially that induced by a debauch, and still more if that debauch have been in particular varieties of wine, may act as an exciting cause. The condition of the toe in a regular paroxysm is but an incident—an expression: the mischief is in the system, but still it would seem, that the pressure of a tight shoe sometimes develops an attack. Such has appeared to be the case, in one or two instances, in the author's own person.

**Pathological Characters.**—These can scarcely be said to exist. If the person dies from an affection in some internal organ, the pathological appearances will vary according to the precise character of the affection; but those appearances cannot be characterized as gouty. The parts themselves, which have been really affected with gout—the articulations—may present no appearances whatever of arthritis; and even in cases of *arthritis nodosa*, there may be merely evidences of the presence of the tophaceous concretions. The sudden disappearance of all evidence of inflammation has led some, as Dr. Marshall Hall, to the belief, that whilst rheumatism is an affection of *tissues*, and, although peculiar, still inflammatory,—arthritis is an affection of *functions*, and more allied to irritation than inflammation. It is difficult, however, to separate these two affections by such broad lines of demarcation. The reasoning that applies to one, applies, indeed, equally to the other. The former we have considered essentially neuropathic in the first instance, and subsequently inflammatory; and the latter must be esteemed the same. Dr. Mackintosh thinks that a diseased state of the stomach and bowels produced by the various causes above mentioned, either singly or combined, in addition to a plethoric state of the system, is the cause of the gouty paroxysm, and he regards gout simply as an inflammation of the affected part, produced

by an effort of the constitution to remove disease from the internal parts to the surface of the body. "Therefore, the inflammation of the toe is not to be regarded as a disease, but only as the occasional symptom of a disease, which may be one either of function or of structure."

Lastly, the disease has been conceived by M. Andral to consist of two elements,—the one inflammatory, and seated in the fibrous tissue; the other more general, and seated in the blood, which is modified in its character by the presence of lithic or uric acid, deposited around the articulations; and, still more recently, Dr. R. B. Todd has urged, that both rheumatic fever and gout are diseases of the blood, and that the phenomena presented by them are wholly due to the presence of a morbid element in the blood, generated within it under the influence of particular causes.

The *vice* in these cases appears to be seated in the whole system of nutrition. Whether the blood be modified or not, the nutritive exhalents of the affected part take upon themselves an unwonted action, and, in chronic cases, secrete at times from the blood concretions of very different elements from those that enter into the composition of the bones. An attention, indeed, to the functional phenomena during a paroxysm of gout, as well as throughout the whole course of chronic gout, exhibits, that the functions of circulation, innervation, and secretion, are all more or less concerned; and in chronic gout especially, those remedies, which act as revellents on the whole frame, are found of the greatest benefit.

**Treatment.**—It is the opinion of some practitioners—now few, however—that a paroxysm of gout is an effort of nature to rid the system of something noxious, and that, consequently, it is not advisable to interfere with it. It was indeed laid down by an eminent authority, Dr. Cullen, that patience and flannel are alone necessary. It is unquestionable, that, under ordinary care, a paroxysm of gout passes off safely; that but few remedies are indispensable,—few, indeed, advisable; and that even in acute gout, the important period for treatment is after the paroxysm has passed away.

A common notion prevails, that gout wards off other diseases, and clears the system of mischiefs within it. This is questionable. An attack of gout is usually preceded by much general indisposition, and after the attack the person usually suffers less, but it is doubtful whether the paroxysm be ever salutary, or remove existing evils. The evidence appears, at least, to the author, to be insufficient to establish the position. Dr. Seymour affirms, that gout, which has originated by hereditary predisposition, is commonly productive of little effect on the constitution in regard of life, unless accompanied by profligate habits; and that he has seen many cases in which the attacks had been frequent, and were still frequent, in men from eighty to ninety years of age. "The celebrated Horace Walpole inherited gout, and had frightful attacks for fifty years: he lived to be eighty-six. The late Lord Manners died of gout [?] at eighty-six, having lived to feel many serious attacks, always in the extremities. Those who have



regular gout, that is, affecting the hands and feet, live often to a great age."

It must be borne in mind in the management, that gout is a peculiar disease, requires the presence of a special diathesis, and that the inflammation is primarily neuropathic. The arguments, indeed, which were adduced to show that rheumatism is neuropathic—as already remarked—apply *à fortiori* to gout. Bleeding, therefore, from the general system, can rarely be advisable, except in robust habits, and then it must be practised early, and not be pushed to any extent, as experience has shown, that loss of blood is not borne well in gout: it is affirmed, indeed, by M. Andral, that in thin and "non-plethoric" subjects, bleeding has been speedily followed by death.

In an ordinary mild attack of acute gout, the patient should be kept entirely quiet, the bowels be opened by some gentle laxative, and as there is probably always a predominance of the lithic diathesis, the best laxative perhaps is magnesia combined or not with rhubarb;<sup>a</sup> the diet should be restricted, and consist of farinaceous substances, as arrow-root, sago, tapioca, &c.

<sup>a</sup> R.—Rhei. pulv. gr. x.  
Magnes. gr. xv.  
Ol. carui gtt. iij.—M.

In mild cases, the author makes no application to the affected part, except covering it with flannel, or with woollen batten enveloped in oil silk, which can only act by the warmth and moisture of perspiration maintained around the part. The bootikins, so highly extolled by Horace Walpole, who was a martyr to hereditary gout, doubtless acted in the same manner. They were—according to Dr. Seymour—simply a glove with a partition for the thumb, and no separate ones for the fingers, like an infant's glove, and made of oiled-silk. Walpole speaks in the most exalted terms of the comfort he derived from them. The author employs the batten and oiled-silk; but he is not positive, that they have been of advantage in affording relief. Some practitioners advise tepid evaporating lotions of camphor.

R.—Tinct. camph. f ʒiij.—ʒiv.  
Aquæ Oj.—M.

Or, R.—Alcohol. p. j.  
Mist. camphor. p. iij.—M.

These may be applied to the part by means of linen rags, several times folded, and kept constantly wetted. The last lotion has been much used, and with the best success, applied at a temperature of from 75° to 85°. Of late, colchicum<sup>a</sup> has been used with the same view, and it has been affirmed, that the local use of morphia has the same effect,—the part being bathed in hot water for a minute, and then lint applied, spread with simple cerate, on which about three grains of acetate of morphia have been distributed.

<sup>a</sup> R.—Tinct. sem. colchic. f ʒij.  
Alcohol. f ʒj.  
Aquæ f ʒiij.—M.

If the local inflammation be very violent, leeches would seem to be indicated, and they are, doubtless, of service in certain cases. Still, the author does not find it necessary to apply them frequently; and

when it is recollected, that the disease is constitutional, and that the local inflammation is only a symptom, it cannot often be required to attack the articular inflammation actively. Soaking the foot in warm water, or the application of a warm poultice, has often afforded effectual relief, and some practitioners are in the habit of applying cold water, and even ice to the affected part. This last was a practice strongly recommended many years ago, but is not much in vogue now, owing to the apprehensions—perhaps groundless—that there must be danger of repelling the phlegmasia from the extremity towards some internal organ. Of late, several such cases have been recorded; but whether owing to the translation of the gout from the affected part elsewhere may admit of an interesting question. Since the application of cold water in various diseases has become more common, it has been more frequently employed; and cases of benefit have been narrated.

Where the pain is very severe, opiates may be given freely: small doses in such cases irritate, whilst sedative doses afford marked relief.

Many years ago, a celebrated gout remedy—*Eau médicinale d'Husson*, was brought forward in France as a specific against gout, and was largely used by many gentlemen of scientific and other distinction. So high, indeed, was its reputation, that great efforts were industriously made to discover its active ingredient. At one time, this was presumed to be *veratrum album*; but, subsequently, it was shown to the satisfaction of scientific individuals, that *colchicum* is the basis, and that it is the *hermodactyl*, recommended by Trallian in arthritis. This *Eau médicinale* was presumed to consist of two ounces of *colchicum root* macerated in eight ounces of *sherry wine*, the dose being from 20 to 80 drops. The author has often exhibited the different preparations of *colchicum* in gout, and frequently with decided advantage; but very often it has failed altogether. In his own person, it has never appeared to prevent or to modify the paroxysm. It was owing, however, to the reputation of the *Eau médicinale*, and to the favourable testimony in regard to the *colchicum* from distinguished sources, that many new preparations of it were received into the American, British, and other pharmacopœias. The wine of the root, (℥xv. to fʒjss.) and of the seeds (fʒj. to fʒij.) is given at times, at the commencement of the paroxysm; and when it has set in, ten or fifteen drops of either of the wines may be given every four or five hours. *Colchicum* is sometimes, also, associated—for purposes already mentioned—with *magnesia* and its sulphate.

R.—Magnes. sulphat. ʒj.—ʒij.  
 Solve in  
 Aquæ Menthæ fʒx.  
 Adde,  
 Acet. colchie. fʒj.—ʒjss.  
 Syrup croci fʒj.  
 Magnes. ʒviij.—M.

Three-tablespoonfuls to be given, so that from four to six evacuations may be produced in 24 hours. This is sometimes called "*Scudamore's Mixture*."

The various preparations of *colchicum*, referred to under the head of acute rheumatism, have been employed by different practitioners, —some preferring one, others another. Dr. Mackintosh remarks, that he has used all, but finds a saturated infusion of the seeds in

wine to answer better than any other, exhibited, according to the age and constitution, in doses of from 20 to 120 drops, conjoined either with the same quantity of tincture of hyoscyamus, or with a half or even a third part of the sedative solution of opium, *Liquor opii sedativus*, which he finds to answer better than laudanum. It probably acts on the system in the same manner in gout as in acute rheumatism. Dr. Holland affirms, that he knows no preparation more certain in effect, or better capable of fulfilling the peculiar purposes of the medicine than the acetous extract. The dose is from thirty drops to two fluidrachms.

Under the name of *Lartigues' Pills*, the following formula has been prescribed in gout, and some of the author's friends depose to its favourable action. The author has taken it himself, but is not able to speak positively as to its effects. The attacks were shorter than usual, but he could not satisfy himself that the pills were the cause of this.

R.—Ext. colocynth. comp. ℥ss.

Ext. colchic. sem. alcoholic.

Ext. digitalis alcoholic. aa gr. iss.—M. et divide in pil. x. (The proportion of extract of colocynth is sometimes doubled.)

Dose, two or three, in 24 hours, until the bowels are acted upon.

An idea has existed that the constant use of colchicum may render the recurrence of the paroxysm more frequent, but there does not appear to be any sufficient reason for this opinion. In rheumatic gout, when given in the dose of eight grains, every hour, until active vomiting, profuse purging, or abundant perspiration takes place, or at least until the stomach can bear no more—it is affirmed by a late writer, Dr. Wigan, to be “the most easily managed, the most universally applicable, the safest and the most certain ‘specific’ [?] in the whole compass of our opulent pharmacopœia.”

Aconitia, delphinia and veratria have been prescribed as in acute rheumatism, but they are rarely used.

It has been already remarked, that a predominance of acidity exists during the arthritic paroxysm, for which laxatives of magnesia or of rhubarb and magnesia are serviceable. It may be, also, advisable to administer, in addition, bicarbonate of soda, a scruple of which may be prescribed in simple water, or in soda water, twice or thrice a day. In France, it is customary, in such cases, to give the *Eau de Vichy*, which is an alkaline water, and therefore appropriate.

A recent writer—Dr. Seymour, of London—who has had much experience in gout generally, adopts the following course in a severe attack. He begins with a scruple of the wine of the root of colchicum twice daily; and at night, supposing the bowels are open, he prescribes three grains of the acetous extract, with five of the compound powder of ipecacuanha.

R.—Vin. colchic. rad. ℥j.

Magnes. ℥ss.

Aq. camphor. ℥x.—M.

The draught to be taken twice a day.

Or, Haust. salin. ℥iss.

Vin. colchic. rad. ℥j.—M.

To be taken twice a day.

R.—Pulv. ipecac. et opii gr. v.

Extract. colchic. acet. gr. iij.—M.

et fiant pil. ij.

To be taken at bedtime.

If the bowels are not open, or are generally inactive, instead of the last prescription he gives the following, to which one or two grains of calomel may be added, if it be thought necessary.

R.—Ext. colchic. acet. gr. iij.  
— colocynth. comp. gr. vi.—M. et  
fiat pil. ii.

To be taken at bedtime two nights in succession.

In this way the medicine—Dr. Seymour says—may be persevered in, “always with good effect, for several days: indeed, no harm can happen so long as the medicine neither produces vomiting nor sharp purging; in either case it must be immediately left off; but in either case the disease will also seem to be very greatly relieved, and in some cases to have disappeared altogether.” Such is the treatment generally pursued by Dr. Seymour, and it will usually succeed; but as usually—the author thinks—will the attack prove to be essentially self-limited; and the cares of the physician will have to be directed mainly to the alleviation of suffering. The nightly pain, according to Dr. Seymour, must be “soothed at all events,” yet, at times, opiates in every form give occasion to so much erethism, that the remedy becomes worse than the disease; and the patient must be taught that it is an evil which he has to endure, and in the removal of which time is a necessary element.

In chronic gout, the same plan of treatment has to be adopted; subject, however, to modifications according to the functional phenomena that are predominant. It may be advisable to apply leeches, but more sparingly than in the acute form; and when the pain becomes fixed in any of the joints, the same revellent agents may be needed as were advised for chronic rheumatism. The part, too, may be covered with oiled silk or flannel. It is in such cases, that a combination of bitters and alkalies or alkaline earths is given with advantage, to correct the lithic acid diathesis, and to give tone to the stomach, which is often greatly impaired.

Where tophaceous concretions have formed in the joints, iodine may be given either in the form of the tincture, (*Tinct. iodin.* gtt. x. three times a day in syrup,) or of Lugol's solution.

R.—Iodin. ℥j.  
Potassii iodid. ℥ij.  
Aq. destillat. fʒvij.—M.

Dose, ten drops, three times a day, in sugared water.

In a case of goître complicated with gout, iodine was given, which succeeded in dispersing the goître: and, at the same time, the tumefaction of the joints, and the depositions, gradually disappeared. Adopting this hint, M. Valentin gave iodine in several cases of gout, with the effect of mitigating the disease, and, at times, of completely curing it. In gouty swellings of the bones, a plaster of ioduretted iodide of potassium has been found efficacious.

R.—Iodid. potass.  
Iodin. aa ℥ss.—℥j.  
Emplastr. hydrargyri seu saponis ℥ij. Fiat emplastrum.

It has been affirmed by Mr. A. Ure, that if benzoic acid be admi-

nistered in doses of a scruple an hour after a meal, in the course of a couple of hours, the urine voided will be found, on adding a small quantity of chlorohydric acid, to yield a copious precipitate of beautiful rose pink acicular crystals, which are hippuric acid, and are found to have taken the place of uric acid in the urine,—none of the latter being discoverable. By thus substituting a hippurate of soda, a salt of easy solubility, for the very sparingly soluble urate of that alkali, Mr. Ure conceives, that the formation of the tophaceous concretions of gout may be altogether prevented. The fact of the conversion of benzoic into hippuric acid, mentioned by Mr. Ure, has been confirmed by Messrs. Keller, Garrod, Liebig and others; but they did not find the quantity of uric acid modified. Such was, likewise, the result of experiments made in this city by Professor Booth and Mr. Boyé; and, consequently, the observations of Mr. Ure require confirmation, or rather may be considered as disproved. Yet Dr. Seymour, of London, states, that he has frequently used the benzoate of ammonia in cases in which the small joints were red and swollen, or where fluid was deposited in the joint of the great toe; and also in cases where the lithate of soda existed in the joints of the fingers; and he thought "it was decidedly useful," that early depositions had been arrested, and large depositions diminished under its use. He regards it as a good diuretic, and as especially adapted to those cases of dropsy in which an irritable stomach renders the employment of ordinary diuretics impracticable.

On questionable chemical considerations the phosphate of ammonia has been brought forward in these cases by Dr. Buckler, of Baltimore. "Taking into account," he observes, "the excess of lithic acid found in the urine at the period of convalescence from an attack of gout and rheumatism, and the subsequent deposit of soda and lime in the white tissues, it occurred to me, that during the existence of these diseases, the lithic acid might exist in the blood in a state of combination with soda and lime, in the form of insoluble compounds, which the kidneys and skin refuse to eliminate. If, then, any agent could be found capable of decomposing the lithate of soda and lime existing in the blood, and of forming in their stead two soluble salts, which would be voided by the kidneys and skin, we should thereby get rid of the excess of fibrin in the blood, the symptomatic fever, and the gouty and rheumatic inflammation, wherever seated, which have been excited by the presence of these insoluble salts; it occurred to me, that phosphate of ammonia might be the agent, provided it could be given in doses sufficient to answer the end without producing any unpleasant physiological symptoms. If our theory were true, phosphate of ammonia seemed to be the proper reagent, for it would form in place of the insoluble lithate of soda two soluble salts, the phosphate of soda, which is remarkably soluble, and the lithate of ammonia, which is also soluble, and both capable of being readily passed by the skin and kidneys. The excess of uric acid would thus be got rid of in the form of lithate of ammonia, and the soda floating in the round of the circulation, instead of being deposited, as it were, like an alluvial formation

in the substance of the fibrous and cartilaginous tissues, would be taken up by the phosphoric acid, and eliminated from the circulation."

With such views, Dr. Buckler administered the phosphate of ammonia in the dose of from 10 to 20 grains dissolved in water, three times a day; and he found when lithic acid was present in the urine, it disappeared under its use. The connexion, however, between lithic acid and gout is not as extensive, perhaps, as has been imagined; and, moreover, experience has not proved more favourable to the phosphate of ammonia than to the benzoic acid.

Under similar views the phosphate of soda has been recommended by Dr. Golding Bird, in the dose of ℥j. to ʒss. three times a day in broth or gruel. This salt, he says, if sufficiently diluted, is sure to enter the circulation, and be excreted by the kidneys, thus furnishing to the urine an energetic solvent of uric acid, as Liebig has shown it to be.

When gout is retrocedent, and attacks an internal organ, which the author believes is an extremely rare occurrence, notwithstanding all that has been imagined to the contrary, the treatment must vary according to the nature of the induced affection. If inflammatory, it has to be met by antiphlogistics; more commonly, however, when it attacks the stomach, the remedies appropriate for cramp of the stomach are indicated. (See GASTRODYNIA.) It has been advised, that attempts should be made by hot stimulating pediluvia, or sinapisms, or both, to recall the gouty inflammation to the extremities; but, as in other "changeable phlegmasiæ," these attempts will probably fail: still their revellent operation may be salutary. They certainly ought not to preclude the vigorous adoption of measures directed to the suffering organ.

In regard to the regimen that ought to be used by those who are subject to attacks of gout, much must be left to the judgment of the practitioner, as respects the particular constitution and habits. Nothing is more clear, than that there can be no plan, which is equally applicable to all. If one element in the causation of the disease be, as suggested by M. Andral, "the supply of nutritive materials in greater quantity than the process of decomposition can remove them," it is obviously important to diminish this supply. With this view, in the generality of cases certainly, it is of moment, that the amount of nutritive aliment should be restricted within proper limits; these limits being regulated, however, in some measure, by the previous habits of the patient. If a person have been accustomed to full living, and to a certain allowance of generous wine, it can never be proper to withhold these altogether. There are many persons who experience an attack of gout whenever their amount of stimulating diet is largely reduced, and who retain their health, provided it be allowed in moderation; and it has been already remarked, that depressing influences of all kinds are common exciting causes. With respect to the precise diet, the remarks that have been made under *DYSPEPSIA* are equally applicable here. Whatever disorders the stomach may lay the foundation for a gouty paroxysm, and hence all aliments, which disagree by their quantity or quality, must be carefully avoided. Improprity in

eating may be almost as injurious as impropriety in drinking. As respects wines, also, much depends upon the habits of the patient. Port wine is proverbially gouty, and so is Madeira. Champagne is usually placed in the same category; but the author has found that much depends upon the quantity taken. A single glass of champagne may disagree,—the quantity of stimulus not being sufficient to compensate for the injurious effects of the free saccharine matter in solution; whilst a pint of the same wine may be taken with impunity. Such has been the author's experience in his own case, as well as in that of several of his patients and friends. The lighter wines of France, and of the Rhine and the Moselle are drunk freely by the inhabitants of countries in which they are made, and they certainly are not as liable to gout as where the stronger wines are taken. Of these stronger wines, the least objectionable, perhaps, is sherry, which may be taken in moderation by the valetudinarian who has been accustomed to his glass of wine after dinner; but if any stimulus be needed, a little weak brandy and water is, perhaps, preferable.

The amount of uric acid in healthy urine, does not seem to be much influenced by diet or by the waste of the tissues; but it is liable to be greatly increased in certain disordered states of the system; and the surplus not being kept in solution is deposited—as elsewhere remarked—as a sediment. In such a state of increase, urate of soda is probably deposited in the form of chalk stones. The excess of uric acid may generally be reduced by diminishing the quantity of azoted matter in the food; but when the deposit is owing to the presence of some other acid in the urine, the treatment must be directed to the neutralization of it, and to the prevention of the formation of more. The mode of carrying these objects into effect is detailed in the part of this work just referred to.

Regular exercise on foot, short of inducing fatigue, attention to the condition of the digestive function, and travelling air and exercise,—the adoption, indeed, of all the recommendations given under the head of *DYSPEPSIA*,—should be inculcated. In chronic gout, succeeding a severe attack of acute gout in the author's own person, he determined to see whether the morbid catenation could be broken in upon by a thorough change of all the influences surrounding him. With this view, he left the city (Philadelphia) with a friend, travelled to Boston, and crossed the country to Albany; returned home at the end of a fortnight perfectly restored, and remained free from any regular paroxysm of the disease for upwards of three years. It can be understood, too, that in those who have the *materies morbi* in their constitution ready to explode, the thorough revolution, produced by change of air, scenery and diet, and the powerful sweating practised by the hydropathists, may be productive of advantage. It has been affirmed, indeed, by one of the most learned and truly distinguished members of the profession—Dr. Forbes—that “in a large proportion of cases of gout and rheumatism the water-cure seems to be extremely efficacious;” and he adds:—“After the evidence in its favour accessible to everybody, we think medical men can hardly be justified, in omitting—in a certain proportion of cases, at least—a full trial of it. No evidence exists of any special risk from the water-practice in such cases.”

## CHAPTER II:

### CACHEXIÆ.

SYNON. *Dysthetica, Dyscrasiæ; Cacoehymiæ.*

THE word *cachexia*, which literally means "bad habit," has received numerous acceptations in the history of medicine, and been made to comprise various diseases, which are now more generally separated from it. One of the latest nosologists, Dr. Good, defines "cachexies," to consist in a—"morbid state of the blood or blood-vessels, alone or connected with a morbid state of the fluids, producing a diseased habit;" and under this head, he ranges *Plethora, Hæmorrhagia, Marasmus, Cyrtosis, Alphosis, Struma, Carcinus, Lues, Elephantiasis, Bucnemia, Catacaussis, Porphyra, Exangia, Gangræna*, and *Ulcus*. Another, Dr. Hecker, enumerates the following species—*Cachexia abdominalis seu gastrica, C. arthritica, C. incerta, C. leprosa, C. mercurialis, C. rhachitica, C. rheumatica, C. scorbutica, C. scrophulosa, C. syphilitica seu venerea*, and *C. syphiloidea*.

The acceptation, in which cachexia is employed here, includes chronic affections induced, by some vice in the system of nutrition, whether this vice be dependent upon a morbid condition of the circulating fluid which furnishes the pabulum whence the tissues are formed, of the vessels of nutrition themselves, or of both combined.

Certain of the morbid conditions, that belong to this division, and affect especially particular organs of the economy, have been described elsewhere—for example, "splenic cachexia," "lead cachexia," anæmia, and many chronic cutaneous affections, in all of which the character of the fluids, or the condition of the function of nutrition, or of both is modified; but there are still others, which may be conveniently considered under this head, and which, although primarily affecting particular portions of the frame, implicate, sooner or later, various organs.

It is obvious, that in order for the tissues to be normally nourished, the blood must be possessed of proper qualities; and that should it fail in these essentials, and impress the parts, which it bathes, abnormally, faulty nutrition must be the consequence. In like manner, if the blood be healthy, and the organs that are concerned in nutrition be morbidly impressed, disease must result; hence hypertrophy or atrophy may be induced; in which there may be simply an increase of the nutritive action in one case, and a diminution of it in another;—or, the nutritive action may, under certain circumstances, become so much perverted, that substances may be separated from the blood that have nothing analogous to them in the economy. These last are cases, which, by all, are considered to belong to cachexia: under some vice in the system, the nutrition of the tissues is so much interfered with as to give occasion to various heteroclitic or heterologous formations. In other cases, the altered condition of the blood gives



rise to a train of phenomena indicating a paucity of fibrin and red globules; it is, therefore, imperfectly adapted for the nutrition of the tissues, whose tone or cohesion is consequently diminished,—as indicated by the general appearance of the patient and by an asthenic condition of all the functions. In other cases, again, the deprivation of nutrition may be indicated by morbid appearances of the cutaneous envelope, or by chronic cutaneous diseases, which may demand, as elsewhere remarked, a system of management calculated to produce a thorough change or revulsion in the morbid tissues.

In regard to those diseases of nutrition, that are dependent upon some morbid influence or *vice*,—as scrophula, cancer, and syphilis, the principles of treatment, it will be found, are much alike. The only method by which the system can be dispossessed of it, is by inducing a new condition, which is incompatible with its existence. Hence recourse is had more especially to those valuable revellents, which are the gifts of modern chemistry.

### I. SCROPHULOUS CACHEXIA.

SYNON. Scrophulosis, Scrophula, Scrophulæ, Morbus scrophulosus, Vitium scrophulosum, Cachexia scrophulosa, Dyscrasia scrophulosa, Pædatrophia glandulosa, Tabes glandularis, Struma, King's Evil, The Evil; *Fr.* Scrophules, Écouelles, Humeurs froides; *Ger.* Scrophelübel, Scrophelkrankheit, Scrophelsucht.

It has been properly remarked by Dr. Stokes, that in the varied catalogue of morbid affections to which man is liable, there is scarcely one of such paramount importance, of such engrossing interest, as scrophula,—whether, we look to the obscurity of its origin, its insidious progress, the number and variety of the organs which it attacks, or its remarkable intractability and extensive fatality.

The definitions usually given of the disease express but very imperfectly its great characteristics. Thus, a modern nosologist, Dr. Good, has given the following,—“Indolent glandular tumours, chiefly in the neck; suppurating slowly and imperfectly, and healing with difficulty; upper lip thickened; skin smooth; countenance usually florid.” The chief phenomena of scrophula, and such as are characteristic, are, certainly, swelling and suppuration of the lymphatic glands, but many other affections have been properly regarded as the effect of the scrophulous cachexia or diathesis,—such, for example, as white swelling, caries of the vertebræ, enlargement of the mesenteric ganglions, &c.; whilst others, both in the domain of medicine and surgery, have been ascribed to some scrophulous *vice*, on grounds that are, perhaps, less satisfactory.

One great stumbling-block in the way of the investigation of scrophulosis is the confusion that has prevailed in regard to what has been understood by the term;—some restricting it altogether to glandular enlargement, as of the glands of the neck, without much, if any reference to a peculiar constitutional diathesis; others applying it, with more propriety, to the condition of the economy, of which the local affection may be esteemed a symptom,—a mere expression; whilst a third class, according to Dr. Stokes, affix the epithet “*scrophulous*” or “*strumous*” to a number of very opposite diseases, which have no character in common, save incurability and chronicity; and perhaps,

as Dr. Mackintosh has remarked, the term is not unfrequently used to conceal professional ignorance, when the practitioner "is puzzled and foiled in the treatment of disease."

**Diagnosis.**—As in the case of tuberculosis, and the various other cachexiæ, there is, unquestionably, a diathesis, without the existence of which scrophula would not be indicated by the symptoms that are considered to mark it. It is difficult to describe the characteristics of this scrophulous diathesis; for, although it is generally laid down, that a fair complexion and light hair and eyes are indicative of it, it is unquestionable, that the evidences of scrophula appear as frequently in those of the opposite, and indeed of every variety of complexion. Amongst the whites of this continent, scrophula is certainly not as common as in England; but of the cases that do occur, the author's experience favours the inference, that it is seen at least as frequently in those of dark hair and swarthy skins. It is a very common affection, too, amongst the negroes, in the Southern States, and in them is often seen in its most aggravated forms. In 126 cases examined by Dr. Glover, 86 had light hair and complexion, and the remaining 40 were dark-haired. But the inmates of the work-houses in the districts that furnished the cases, bore nearly the same proportion of light and dark complexions,—there being 97 of the former and 47 of the latter, amongst 144 individuals—which would show, that the light-haired scrophulous cases were in greater proportion, because the proportion of light-haired in the community was greater.

At times, the child—for the evidences are most commonly presented in childhood—exhibits appearances that leave but little doubt of his scrophulous constitution. The paleness of the skin; its transparency, as it were, and delicacy; the large size of the head; the prominence of the abdomen; the development of the articulations, and the smallness of the muscles,—all indicate a defective formation, which has been esteemed to characterize scrophula. Yet these evidences are often absent, when the scrophulous diathesis, notwithstanding, exists; and the glandular affections—as has been remarked above—may co-exist with an opposite character of the surface.

It need scarcely be said, that simple tumefaction of the ganglions of the neck is no more strumous than the same condition of the lymphatic ganglions in other parts of the body. We know, indeed, that they inflame in healthy constitutions under irritation. For example, in children, eruptions on the head and face not unfrequently cause inflammation, and, at times, suppuration of the lymphatic ganglions of the neck; in the same manner as any injury of the upper or lower extremities induces swelling and inflammation of the lymphatic ganglions of the axilla or groin; and as irritations in the mucous coat of the intestines cause inflammation of the mesenteric ganglions.

The symptoms, which are usually considered to indicate the presence of scrophula, are the following:—slight inflammation of the alæ nasi, which are red, hot, and chapped. The cervical glands or ganglions enlarge, being at first small, and slightly sensible to the touch; but, subsequently, hard, irregular on the surface, and indolent. In this stage, they are movable under the skin. Gradually, they increase in

size; become immovable, painful, and, occasionally, by their pressure, interfere with the subjacent organs, so as to affect the voice, respiration and deglutition. The colour of the skin is scarcely changed, but, at each side of the neck, the projection is, at times, so great as to constitute considerable deformity, and to interfere with the movements of the head, and even with the separation of the jaws. After having remained in an indolent state for an uncertain period, the tumours may gradually disappear. Such, at least, is usually the case, where they occur in adolescence, and it is the most favourable termination; but in childhood especially, they more frequently proceed to suppuration, soften, are painful, and fluctuation is perceptible; the skin, covering them, becomes red and bluish, and, ultimately opens, giving issue to a puriform fluid, which is usually of a thinner kind than that from phlegmonous abscesses; and is mixed with pieces of white substance resembling curds. The irregular wound, caused by the spontaneous opening of the abscess, heals with difficulty, and the resulting cicatrix often constitutes an unsightly deformity. Where the *vice* tinctures the organism deeply, the scrophulous inflammation first affects one gland and then another, and ultimately the individual may die of phthisis or tabes mesenterica.

It is affirmed by Dr. Stark, that the odour of the perspiration in scrophula resembles that of sour beer; but the author has not observed this.

When blood is drawn in scrophulous affections, it is deficient, according to M. Simon, in solid constituents, especially in fibrin and red corpuscles. According to M. Dubois, it coagulates slowly; the clot is small, soft, and diffuent; the serum thin, and often of a red colour. When examined under the microscope, some of the corpuscles appeared devoid of colour at the edges only; some were entirely colourless. Their size was not materially changed, but they appeared flattened, spherical or cylindrical. Hence it has been also inferred\* that there is a deficiency in the quantity of salts in the blood of scrophulous persons. In some analyses made by Dr. Glover, it appeared, that in females the ratio of blood corpuscles was considerably diminished, whilst that of the fibrin was increased; in males, also, the proportion of blood corpuscles was diminished, and in some instances remarkably so, whilst the solids of the serum were increased:—the increase affecting chiefly the albumen,—the extractive matters not being augmented to a great extent.

The urine of children of a scrophulous diathesis, according to M. Simon, differs considerably in the majority of cases from that of health. It is usually pale; but if there be much vascular excitement it becomes more or less deeply coloured; its specific gravity is lower than in a state of health, and in many cases it is much more acid than the urine of children is generally observed to be. It has, however, been found neutral. According to M. Schönlein, the principal chemical changes consist in the diminution of the nitrogenous constituents—the urea and uric acid—and in the appearance of the non-nitrogenous oxalic acid, and occasionally, but more rarely, of benzoic acid. It must be borne in mind, however, in our uroscopic examinations, that the urine of

children naturally contains a smaller proportion of urea and of salts than that of the adult.

The scrophulous diathesis may exist through life, but, generally, under new evolutions of the system, it diminishes, and, at times, wholly disappears, or is so modified, as, under avoidance of the exciting causes, to give no manifestations of its presence afterwards. Thus, under the changes that take place in the economy at puberty, a marked amelioration often occurs in the glandular and other affections that had previously existed; and, if not at that period, in the course of a few years afterwards, this desirable change may ensue. It is, indeed, important to bear in mind, that nothing but a thorough change in the whole system of nutrition can be productive of essential benefit in these cases, in order that our therapeutical measures may be regulated accordingly.

**Causes.**—It has been remarked by M. Dubois d'Amiens, that to study the causes of scrophulosis is to study its nature. This, however, applies to the investigation of the proximate cause of all diseases. Dr. Stokes considers the lymphatics to be the veins of the tissues that are nourished by white blood, and scrophulosis to be owing to the predominance of white tissues in the economy, and to be nothing more than a chronic irritation of the white parts, and of the organs immediately connected with them. The author has, however, remarked elsewhere, (*Human Physiology*, 6th edit. ii. 84, Philad. 1846.) that the white tissues are in all probability nourished, directly or indirectly, by red blood; that the sole cause of their want of colour is that a small amount of blood, a single row, for example, of corpuscles is contained in each small vessel distributed to them; and that there is but little reason for the belief in the existence of a distinct set of white vessels. "We may look upon the scrophulous diathesis," Dr. Stokes remarks, "as a condition of the human body, which is, to a certain extent, imperfect, and which is to be attributed to arrest of development. There is a period of fœtal life, in which the whole mass of the body consists of white tissues. According as the individual progresses towards maturity, the red tissues become more abundant; and when he arrives at maturity, the proportion between the tissues becomes completely altered, the red being now more abundant than the white. But if the process should happen to be arrested, either shortly after birth, or during life, we have then an individual of a lower degree of vitality, and approximating to the class of white-blooded animals. That we may reduce the scrophulous diathesis to arrest of development seems to be borne out by other considerations. We find, in persons of a strumous diathesis, proofs of arrest of development in various parts, so that, whether we consider the question as to the development of the whole or of particular parts of the body, the same conclusion obtains. Scrophulous children have large heads, and it has been long known, that they are exceedingly subject to hydrocephalus. The great size of the head in this instance is reducible to the principle of arrest of development; and here we have some explanation of the fact of the activity of the intellectual powers in scrophulous persons. Again, scrophulous children have large bellies; and here we have another proof of the

arrest of development. In the fœtus, the belly is larger in proportion than it is in the adult, and if the individual grow up with this predominance, it is a proof of arrest of development. The liver in the fœtus is, as we all know, very large. Now, it is a fact, that many persons of a scrophulous habit grow up with this fœtal condition of the liver; and, accordingly, we find this organ enlarged, not as the result of disease, but because an equal and proportionate increase of other parts has not gone on; and here we have another fact confirming the principle of arrest of development. Scrophulous children are observed to have small limbs and contracted chests. Here, too, we again meet with the fœtal condition. In the fœtus, the chest is small and contracted, and the extremities are puny and ill-developed. How beautifully this tallies with the state of the lung at that period of life when there is very little employment for the thorax, and when the active functions of the lung have not as yet been called into operation. This too, informs us, why it is that such children are so liable to affections of the lungs. We find, that scrophulous persons are of a feeble frame, and have weak and flabby muscles; and, in accordance with this, we find, on examination, that the muscular system, to a certain degree, represents the condition of fœtal life, that the blood is albuminous, and its proportion of fibrin small. We observe, that scrophulous children are subject to rickets, and that the proportion of phosphate of lime in their bones is small. Now, this is precisely the condition of the bones in the fœtus. Thus, whether we look to the whole or to particular parts of the body, we find that scrophula is reducible to arrest of development, and that there is not in it any virus, anything particular or specific, as has been erroneously imagined. To these considerations it might be added that nothing is more common than to see those monstrosities, distinctly referable to local arrest of development, occurring in the scrophulous subject; and the statistics of monstrosity show, that in this respect the female sex predominates over the male."

Whether the views of Dr. Stokes be admitted or not, the arguments he has brought forward in support of them are certainly ingenious and plausible; and there can be no doubt that the formation of the frame in scrophula is one of defect; but whether a defect owing to arrest of development—as suggested by Dr. Stokes—may admit of question. The author has always entertained the view, that the condition of the system of nutrition is such as to demand a mode of management, which will add to, rather than detract from, the powers; and radical error appears to him to have been incurred by those who apply the rigid system of regimen and therapeutics to scrophulous inflammations, which is adapted for ordinary phlegmasiæ. These views, expressed in the first edition of this work, are confirmed by the observations of recent histologists. It has been remarked by Gerber, that "albuminous or unorganized tubercles—(which with great propriety are called scrophulous tubercles)—can only be produced from exudations abounding in albumen, poor in fibrin;" and such exudations, it need scarcely be said, are more likely to occur from blood itself defective in the fibrinous or essentially plastic element.

It has been argued by some, that the scrophulous constitution is

implanted in organization, and that unless such a predisposition exists, generally derived from progenitors, the disease is not developed. This transmission Dr. Mackintosh is disposed to doubt, "as many instances might be quoted where both parents were strongly marked with all the appearances described as scrophulous, and nevertheless their children were very healthy. On the other hand, cases are often seen, where the parents had no vestige of the complaint, and yet the children were scarcely ever without some of the affections generally denominated scrophulous." It can scarcely, however, admit of doubt, that an organization may be transmitted from progenitors, which may predispose to the development of scrophula under the application of favourable exciting causes. That this influence is, however, very slight, is sufficiently shown by the elaborate researches of Mr. Phillips, who affirms, that "it would seem, that in children, subjected after birth to similar circumstances, the hereditary influence does not appear to be exerted beyond 4 per cent;" and he infers farther, "that it is not apparent, that the influence of a scrophulous parent is more efficient to induce scrophula in the child, than the influence of equal constitutional debility in a parent, originating in other causes than scrophula."

Dr. A. Combe has remarked, that a very influential source of delicacy in children is an habitually deteriorated state of health in the parents, not exactly amounting to active disease, but arising chiefly from mismanagement or neglect, and showing itself in a lowered tone of all the animal functions, and a general feeling of not being well. Of all the causes of this description, habitual indigestion has been considered the most frequent and deteriorating to the offspring, and a very common cause of scrophula.

But, although such an organization may be thus handed down, it is equally unquestionable, we think, that the scrophulous diathesis may be developed *de novo*, by faulty nourishment, want of cleanliness and ventilation, imperfect clothing, exposure to cold and moisture, and restriction to small miserable habitations in crowded streets, or in manufactories where children are deprived of solar light. Even animals become scrophulous, when exposed to some of those influences. Sheep, when too closely folded together and deprived of their free range and accustomed food, and, indeed, all domesticated animals, if similarly circumstanced, are liable to cachexia that may perhaps be esteemed scrophulous. Dr. Mackintosh remarks, that he has seen scrophulous affections produced in a short space of time in many of the domestic animals by unwholesome feeding. By such means he has observed them purposely introduced in poultry, rabbits, and pigs. "A pig," he adds, "is called 'measly,' when it is affected with a very general disease of the glands throughout the body, which is well known to depend upon the manner in which it has been fed." The opinion of Dr. Mackintosh, in regard to glandular affections denominated scrophulous, is, that they are generally engrafted on the constitution by improper food and deficient clothing; by neglect or bad medical treatment during the period of dentition; the progress of scarlet fever, measles, and other cruptive fevers, as well as during the ordinary eruptions and affections of the throat; and, lastly, that they are pro-

duced by mismanaging swollen and inflamed glands during their early stages. "Hence," he remarks, "it is a disease with which some of the members of almost every family in this climate (Scotland) are at one time or another affected. We see glandular affections in persons of every variety of colour of the hair, eyes, and appearance of the skin, and in every variety of the constitution. I have, therefore, long ago persuaded myself, that they depend upon gastro-intestinal irritation, which point of pathology has been clearly established with reference to the most scrophulous of all scrophulous diseases, viz., that which is termed *tabes mesenterica*. This view is much strengthened by the following circumstances: scrophula is a frequent disease among the poor, and those who are fed upon large quantities of weak broth, coarse ill-baked bread, or hard indigestible puddings. From these causes, the disease is often seen in charitable establishments for children; and I have also seen it traced to English boarding-houses, where the children are crammed with hard pudding, before they are allowed even to smell meat, and are told; 'that the young ladies and gentlemen that eat most pudding shall have most meat.' Poor children!"

The influence of bad and insufficient aliment, and of an excess of vegetable food especially, has been satisfactorily shown by Mr. Phillips.

The nature of scrophula would appear, then, to be a vicious state of the system of nutrition, a special depravation of the nutritive actions; yet this vice is not specific, and capable of being transmitted artificially. All the experiments that have been instituted, with the view of communicating it by inoculation, have failed. Hebréard, physician at the Bicêtre, could never render dogs scrophulous, either by rubbing their skins with the pus of patients affected with the disease, by applying a rag impregnated with it to the denuded skin, or by introducing it by inoculation. Scrophulous matter was administered, with the food, to Guinea pigs for several days in succession, by M. Lepelletier, and he injected it into the crural veins, and inserted it into the ganglions and lymphatics, without more success. It need scarcely be said, that such experiments on animals prove nothing in respect to man: they have, however, been extended to him; and the matter of scrophula has been mixed with the vaccine, and inserted into the arm, without exciting scrophula, and without inducing any modification in the course of the cow-pox. Many trials have, likewise, been made with the unmixed matter of scrophula, without the disease resulting. It has been properly observed, however, by M. Dubois d'Amiens, that this does not remove the objection to a child's being suckled by a scrophulous nurse; for, in such case, the milk cannot fail to participate in the depravation of the solids and fluids, and, therefore, to furnish an aliment but little adapted for the perfect nutrition of the young being.

The similarity between the condition of the system of nutrition in scrophulosis and tuberculosis has been referred to under another head. It was there shown, that although analogous, they cannot be regarded as absolutely identical. The period of life at which they respectively prevail is different; for whilst scrophulosis generally exhibits itself in childhood, tuberculosis is more common in the ages of adolescence

and virility. Many recent observers, however, argue strenuously for their identity. MM. Rilliet and Barthez affirm, that having examined the bodies of a large number of scrophulous children at the Hôpital Saint Louis, they met with no instance in which tuberculous deposits did not exist in some part or other. Many affections, commonly termed scrophulous, as ophthalmia, they consider of a secondary nature, accidentally complicating the original scrophulous or tuberculous habit, but not essentially scrophulous in their nature. They propose, indeed, to banish the term "scrophula" from medical nomenclature, as being vague and apt to mislead, and to substitute for it *tuberculization*. M. Bredow, of Saint Petersburg, seems to entertain a similar view; but he proposes to retain the word "scrophula," to designate tuberculous disorganization of the lymphatic glands; and the terms "tubercle" and "tuberculous disease," for the same affection when existing in other organs.

Histologically, no difference, according to M. Vogel, exists between scrophulous, tuberculous, and typhous deposits. They consist of an amorphous stroma, molecular granules, and undefined cells and cyto-blasts, varying in diameter from the 600th to the 300th of a line, occurring in very different proportions, and mixed with fat globules. The granules are partly protein-compounds, partly fat, and partly calcareous salts; nor, according to the same observer, can scrophulous matter be with certainty distinguished histologically from typhoid matter: "There occurs every intermediate grade between it and ordinary suppuration."

Certain climates are especially calculated to develop scrophula. According to Dr. Whitelaw Ainslie, who had much experience in the diseases of Southern India, it—but not tuberculosis, which is less common than in Great Britain—is of all disorders the one to which the climate of India proves "most congenial." "How," he observes, "this baneful effect of a hot climate upon persons so unfortunately predisposed is to be accounted for, it may be difficult to say, as the state of darkness in which we have so long wandered regarding the proximate cause of affections of this nature leaves us little more than a conjecture. One thing is certain, that as laxity of the solids, and a general deficiency of bodily vigour, are known to be the constant concomitants of the complaint, such a condition will be greatly increased by extreme heat, which enervates in no common degree." Yet this explanation will not hold; for in Martinique, according to M. Ruz, whilst consumption is the most frequent disease of the colony,—from 1834 to 1839 he had seen only one or two cases of white swelling, no case of Pott's caries, and rarely a case of glandular enlargement. And again:—it is stated by Sir Alexander Crichton, Sir George Lefevre, and others, that pulmonary consumption is much less frequent in Russia than in Great Britain; whilst returns obtained by Mr. Phillips show, that scrophula prevails to nearly three times the extent it does in Great Britain. From these and other facts and arguments, Mr. Phillips concludes; that the points of resemblance between tubercular disease generally and scrophula are strong in so far as concerns the deposit; but in all else they are weak.



The idea has generally existed, that scrophula\* is eminently an English disease; but Mr. Phillips feels himself warranted in stating from data furnished from various parts of the world,—from this country by Professor Jackson, of Philadelphia, and Dr. Parkman, of Boston,—that there is no country, so far at least as his information extends, “in which the people are more free from the disease than in England and Wales.” He found, that comparing Paris with London, the deaths from scrophula, when compared with the population, are six times as many in the former as in the latter capital; and that for the whole of France the marks of scrophula presented by recruits were twice as many as among the recruiting population of England.

**Treatment.**—From what has been said of the nature and causes of scrophula, it is manifest, that the treatment must be both hygienical and therapeutical; and, that the former is, perhaps, of even more importance than the latter. Under the most favourable circumstances, a long time is needed to produce the requisite change in the system of nutrition. It is of course important, in the treatment, that the patient should be removed from all those unfavourable influences, that have been concerned in the etiology of the disease; and hence, that he should leave a damp and restricted situation and dwelling, and select a purer air, and an habitation in which light and ventilation can be readily admitted. Exercise in the open air should, at the same time, be advised; and if the individual have been accustomed to insufficient nourishment, a diet capable of improving the development of the frame should be advised, and, with this view, animal food should be freely allowed. The tendency to improvement would seem to be most remarkable in the spring and summer months; and this must be borne in mind in estimating the value of special remedial agencies. Mr. Phillips expresses his conviction, that beyond every other agent, excepting food, season “is the one whose influence is greatest in the excitement of the cure of scrophula.”

Along with these hygienic cares, certain therapeutical agents may be properly administered. In this, as in every form of cachexia, the remedies to be employed belong to tonics and to eutrophics.

Of the tonics, the various mineral and vegetable substances,—preparations of gentian, colomba, and, recently, of the leaves of the walnut, and other bitters,—chalybeates, and other mineral remedies of the class, have been beneficially administered; but they are far inferior to eutrophics. Of these, the one that has been most extensively used, and, in the opinion of many, has been most useful, is iodine in some of its various forms of preparation. Soon after its introduction into notice, it was given in those affections internally, and was likewise prescribed externally, especially when the disease was manifested on the surface. In favour of its good effects numerous practitioners soon came forward with their testimony. M. Lugol considers it the most efficacious remedy we possess in scrophula. He especially recommends the watery solution, which bears his name, internally, and baths of iodine externally. The fortunate results of his trials in the Hôpital St. Louis were corroborated by a committee appointed by the

*Académie Royale des Sciences* to examine them. Perhaps no better form of preparation can be given than the solution of Lugol.

R.—Iodin. ℞j.  
Potassii iodidi ℞ij.  
Aquæ destillat. fʒviij. solve.

Dose, ten drops, gradually increased, three times a day, in sugared water.

The condition of the system in scrophula might appear to suggest rather the iodide of iron, in which we have eutrophic and tonic properties combined. Accordingly, it has been extensively used, and with valuable results. Of this, a grain may be given three times a day, and the dose may be gradually raised to three grains.

R.—Ferri iodid. gr. xxiv.  
Aquæ destillat. fʒj.—M.

A teaspoonful contains about three grains.

Cod-liver oil, which has been found to contain iodine, has been given largely in the various forms in which scrophula manifests itself, and we have the testimony of numerous physicians, of Germany especially, to show that its efficacy is marked. One writer, indeed, M. Schenck, esteems it to be as certain a remedy in scrophula and rickets, as cinchona is in intermittent fever. The dose, for the adult, is half a spoonful to three spoonfuls, two or three times a day in coffee or lemon-juice. The author has had no experience with it. Skate-liver oil, has been of late recommended as preferable to cod-liver oil. In Holland and Belgium, the oils obtained from the livers of *Raia clavata*, and *R. batis*, have been used in place of the latter, on account of their being less disagreeable to the taste, and even more efficacious as a therapeutical agent. It is said by MM. Girardin and Preisser to contain a per-centage more of iodide of potassium; and in point of purity and other properties, appeared to be superior to it. Mr. Donovan is of opinion, that every known fact impugns the notion, that the curative principle is iodine; and it has been affirmed recently, that the same beneficial effects have been produced by the ordinary whale oil, given in the same manner. (See the author's *New Remedies*, 5th edit. p. 473; Philadelphia, 1846.)

Mr. Ure has suggested the use of cod-liver as a diet for those for whom the oil is considered to be indicated. In order to prevent the loss of oil, he recommends that the livers should be immersed entire in boiling water, to which a sufficient quantity of salt has been added to raise the boiling point to about 220° Fahr. The sudden application of this high temperature coagulates the albumen of the liver, and prevents the escape of the oil. When the liver is cut, the oil exudes, and mashed potato may be used as a vehicle. Mr. Ure, having been advised to take cod-liver oil, found the nauseous flavour a great objection. He then contrived the above plan which answered extremely well.

Bromine, whose properties resemble those of iodine, has been given in the same cases, but possesses no advantage over the other, and is by no means as easily attainable.

Within the present century, the preparations of gold have been brought forward in scrophulous, and some other, cachexiæ, with high

recommendations. They have been employed at the Hôpital des Enfants Malades, and at the Hôpital la Charité, of Paris. At the former institution, they were given in enormous doses, but without producing any effect on the disease. In this country, they have not been much used; nor do they seem to possess the efficacy that would recommend them to great confidence.

With many, there has been an objection to the employment of mercury in scrophulosis; and there can be no question, that where it is pushed to such an extent as to induce salivation, or much mercurial irritation, it may prove injurious; but it is equally unquestionable, that, in minute doses, it may occasionally produce benefit. Of late, it has been associated with iodine, and administered advantageously in various scrophulous affections, especially in such as were complicated with syphilis.

R.—Hydrargyri iodid. rubr. gr. v.  
Miccæ panis q. s. ut fiant pilulæ lx.

Dose, two, morning and evening, gradually augmenting the quantity of the red iodide.

Various other therapeutical agents have been used by different observers. The carbo animalis (gr. ij., three times a day) has been highly extolled by some practitioners; but, by others, it has not been used with advantage. The chlorides of calcium and barium have likewise been given occasionally with good effect. (*Liq. calcii chlorid.* gtt. xxx.; or *Liquor. barii chlorid.* gtt. v. three times a day.) The doses of both must be gradually augmented; and the remarks, before made, must be borne in mind,—that long perseverance will be demanded in the use of whatever article is selected by the practitioner: in no case must benefit be expected before several weeks have elapsed. Mr. Phillips states, that the power of barium as a discutient over scrophulous glandular tumours, and over the scrophulous constitution, are little, if at all, inferior to those of iodine.

Of late, different preparations of the leaves of *juglans regia*—walnut tree—and especially the extract—have been highly extolled by M. Négrier as antiscrophulous remedies. (*New Remedies*, p. 424.)

Thus much for the management of scrophulosis in general,—both when it exhibits itself only in the form of scrophulous cachexia; and when there are marked outward manifestations of the disease, as glandular swellings, superficial ulcerations, &c. &c.—many of which require the attention of the surgeon, and of one who is well acquainted with internal pathology.

Where the glands of the neck are concerned, or scrophulous swellings exist in any part of the body, should they be accompanied with much inflammation, it may be advisable to direct the application of leeches even more than once, followed by an ordinary bread or other emollient poultice. In this way, the tumour may be discussed; but if the inflammation be more active than it usually is, and manifestly tend to suppuration, the pus should be evacuated as early as possible, by an incision made with a lancet in the direction of the folds of the integument, to avoid an unseemly cicatrix; and, for the same reason, the poultices, which may be deemed advisable to favour suppuration, should not be continued so long as to render the integument

so soft and thin that it subsequently sloughs off. Where the strumous swellings are more indolent,—along with the internal remedies and regimen inculcated above, many local applications may be made use of. Chlorinated lime has been applied with advantage in the form of ointment,<sup>a</sup> as well as the aqua chlorini.<sup>b</sup>

<sup>a</sup> R.—Calcis chlorin. ℥j.  
Adipis ℥j.—M.

<sup>b</sup> R.—Aq. chlorin. part. j.  
Adipis part. viij.—M.

Iodine has been employed advantageously in the form of tincture, applied repeatedly by means of a camel's-hair pencil. The ointment of iodine, of the iodide of potassium, of the ioduretted iodide of potassium, and of the iodide of lead, have likewise been used with advantage, rubbed on the part night and morning, and the iodo-hydrargyrate of potassium has been used both internally<sup>a</sup> and externally.<sup>b</sup>

<sup>a</sup> R.—Hydrargyri iodid. rubr. gr. viij.  
Potass. iodid. gr. viij.  
Aque destillat. f ʒviij.—M.

<sup>b</sup> R.—Hydrargyri iodid. rubr. gr. vij.  
Potass. iodid. ʒij.  
Adipis ʒi.—M.

Dose, f ʒij. to ʒij. in the twenty-four hours.

An ointment of veratria has been strongly recommended, but it has not been much employed.

R.—Veratriæ gr. x.  
Adipis ʒss.—M.

A piece, the size of a hazelnut, may be rubbed in for ten minutes, twice a day.

Where ulceration has taken place, and it appears to be indolent, a solution of acetate of lead,<sup>a</sup> or of acetate of zinc,<sup>b</sup> may be applied warm with advantage.

<sup>a</sup> R.—Plumbi acet. ʒss.  
Aque f ʒvj.—M.

<sup>b</sup> R.—Plumbi acetat. ʒss.  
Zinci sulphat. ʒj.  
Aque f ʒvj.—M.

Creasote water,<sup>a</sup> the iodide of mercury,<sup>b</sup> as well as the red iodide,<sup>c</sup> may also be used as topical applications.

<sup>a</sup> R.—Creasot. f ʒss.  
Aque destillat. f ʒvj.—M.

<sup>b</sup> R.—Hydrarg. iodid. ʒij.  
Adipis ʒij.—M.

<sup>c</sup> R.—Hydrarg. iodid. rubr. gr. vi.  
Adipis ʒvj.—M.

When these remedies fail, conjoined with the employment of pressure by means of adhesive straps, and the various internal agents already recommended, a thorough change of all the influences surrounding the individual should be advised. The sea-shore is generally preferred, where the patient, in addition to change, can have the benefit of sea-bathing. The good effects, indeed, that have resulted from this course, have led to the belief, that the salt may have exerted an important agency; and, accordingly, where removal to the sea-shore has not been practicable or considered inappropriate, the application of a solution of salt to the scrophulous tumefaction has been recommended. Alone, however, the salt-wash is possessed of little efficacy.

The scrophulous affections, which implicate particular organs, fall under consideration elsewhere.

## II. SCORBUTIC CACHEXIA.

SYNON. *Luca scorbutica*, *Cacochymia scorbutica*, *Cachexia scorbutica*; *Fr.* *Cachexie scorbutique*.

Under this head may be conveniently considered, affections that have, by many writers, been widely separated;—for example, sea scurvy, land scurvy, and the different forms of petechiæ, all of which have been classed under *Porphyra* by one nosologist, Dr. Good, who defines it “livid spots on the skin, from extravasated blood; languor, and loss of muscular strength; pains in the limbs.” In consequence, also, of the appearance of the skin, they have been classed, by some, amongst cutaneous diseases. Dr. Willan has treated, under the head of *Purpura*, of the land scurvy, and of the petechial spots of malignant fever,—*Petechia contagiosa*; yet he has omitted sea scurvy—an affection almost identical with land scurvy. They are all,—as a general rule,—dependent upon a similar depraved condition of the fluids and solids, and therefore true cachexiæ.

In every form of scurvy, the hemorrhagic tendency is marked; and this, according to the recent researches of M. Andral, is owing to the fibrinous element of the blood being deficient in quantity, whilst that of the globules may be natural. In this respect, scorbutic differs from chlorotic cachexia. In the latter, the proportion of the globules diminishes, and hence, hemorrhage is unfrequent. In adynamic or putrid fever, on the other hand, the fibrin diminishes as in scurvy, so that it was not inappropriately designated by M. Borden as *acute scurvy*—*scorbut aigu*.

It may be convenient, for description, to adopt the division into *Porphyra simplex*, *P. hæmorrhagica*, and *P. nautica*.

## 1. PORPHYRA SIMPLEX.

SYNON. *Petechiæ sine febre*, *Phænigmus petechialis*, *Profusio subcutanea*, *Purpura simplex*, *Peliosis*; *Fr.* *Pourpre*; *Ger.* *Petechien*, *Peteschen*, *Blutfleckenkrankheit*, *Fleckenkrankheit*.

This form of porphyra, which is usually classed amongst cutaneous diseases, often appears without any marked derangement of function. The spots are numerous, but small, of the form of flea-bites, and appear chiefly on the breast, arms, and legs, with paleness of the surface. At first, they are light red in the young, and darker in older persons. The eruption usually occurs at night, and is not perceived until the following morning. The spots are not numerous in the first instance, but they become more and more so in a few days; successive patches appearing as their precursors fade away.

The duration is various,—from between three or four weeks to years. Shortly after the spots come out, they first grow darker, and livid, then yellow, and gradually disappear, to be again reproduced.

## 2. PORPHYRA HÆMORRHAGICA.

SYNON. *Purpura hæmorrhagica*, *Stomacace universalis*, *Hæmorrhagia universalis*, *Hæmorrhœa petechialis*, *Morbus maculosus hæmorrhagicus*, *Peliosis hæmorrhagica*; *Fr.* *Hémacelinoise*, *Pélioise*, *P. hémorrhagique*, *Maladie de Werlhof*; *Ger.* *Werlhoffsche Blutfleckenkrankheit*, *Blutflecken mit Blutung*.

This is a more aggravated form of the same affection, but even it

is not always attended with febrile excitement, or with any very marked disturbance of the system. The spots are, in this case, larger, more numerous, of a darker colour and more irregular, so that, at times, the surface presents the appearance of large bruises,—often as if made by a whip—*vibices*. The extravasation of blood, which occasions them, generally takes place into the substance of the skin, and subjacent cellular membrane; but, at times, the cuticle is elevated into blisters, which are filled with fluid blood. In the majority of cases, when these spots appear upon the skin, hemorrhage takes place from the mucous membranes—from those of the nose, mouth, stomach or intestines. Occasionally, too, it is discharged from the urinary organs; and in cases where hemorrhage does not actually take place from those membranes, spots, produced by the infiltration of blood—like those of the cutaneous surface—are seen on them. At times, the loss of blood is very great and rapid, but, more commonly, the system suffers, and the patient often sinks under a more protracted and gradual oozing. Where blood is discharged from the urinary organs, the urine has a dark reddish-brown colour, according to M. Schönlein, in consequence of the presence of hæmatoglobulin. In such cases, it develops sulphhydrate of ammonia, and speedily becomes putrid.

These last cases are always ushered in, or accompanied, by signs of great prostration, the pulse being usually small, quick, and easily compressible; but, at other times, more voluminous. Still, if proper attention be paid, it will indicate the oligæmic condition of the system. Commonly, too, unless the disease is very rapid in its course, serous infiltration takes place into the cellular membrane of the lower extremities. At times, too, the encephalic functions become greatly disordered; and the organs of respiration and circulation exhibit functional derangement by dyspnœa, palpitations, &c.

The disease is one of great danger, sometimes, although rarely, terminating in a few weeks; at others, continuing for months and years. The author has seen one or two cases, in which the infiltration of the lower extremities was considerable, that persisted for a long time without the general health appearing to be much deranged.

The cause of this variety of scorbutic cachexia seems to be defective hæmatosis, which may be induced by various causes. Amongst the occasional causes have been enumerated,—a residence in a cold, a damp, badly ventilated habitation; insufficient and unwholesome food,—as of meat too long kept; dry and decomposed vegetables, &c. M. J. Cloquet has described many cases of the disease occurring in persons who had undergone extensive amputations; but the precise agency of these operations in the production of the disease is not very comprehensible. It would appear, that certain persons are particularly predisposed to it. It occurs in those of broken-down constitutions; in such especially as have long resided in malarious regions, and who suffer under hypertrophy or atrophy of the liver or spleen.

The author has elsewhere referred to "*splenic cachexia*," as it is termed in India, which is accompanied by all the signs of this form of purpura as well as of the next, and which is evidently connected with, and perhaps dependent upon, hypertrophy or atrophy of that viscus.

Not long ago, he had a fatal case of this form of diseased spleen under his care, in which the organ was greatly enlarged, and encephaloid in certain portions. All the signs of porphyra hæmorrhagica supervened with hydropic infiltrations of the lower extremities, under which the patient died. In another case of porphyra, which fell under his care, the spleen was sound, but the liver was scirrhus, and incurable jaundice preceded the fatal termination.

When the parts, in a case of porphyra are examined after death, the appearances are such as might be anticipated from the functional phenomena. Large ecchymoses, in which the blood may be concrete but is more generally semifluid, are observed under the cutaneous integument, or in the submucous cellular tissue, according to circumstances,—with more or less effusion of blood into the serous cavities, or into the tissue of the parenchymatous organs.

The blood is usually, perhaps, altered in its appearance and general properties; instead of looking opaque and black, coagulating as usual, and separating into serum and crassamentum, it continues, as in porphyra nautica, tremulous, translucent, and is of a light red, like thin currant jelly. In other cases, however, its appearance has been that of health, or it has even been buffy, according to Messrs. Parry and Babington,—facts, which do not accord with the recent views of M. Andral, that the fibrinous element of the blood is probably depressed beneath its normal proportion in every case of purpura hæmorrhagica. This subject will engage attention presently.

The urine is commonly of a dark reddish-brown and sometimes almost black colour. Although slightly acid, when discharged from the bladder, it very soon becomes alkaline, and develops a strong and disagreeable ammoniacal odour.

Although in the generality of instances, the disease appears in broken-down constitutions, and where mischief has occurred in some of the solid viscera of the abdomen, it would seem to happen occasionally in young persons living in country situations, previously enjoying good health, and provided with all the necessaries and comforts of life. This circumstance—as properly remarked by Bateman, Schedel, and others—tends greatly to obscure the pathology of the disease, as it appears to exhibit a wide difference between porphyra hæmorrhagica and true sea scurvy, to which it has been generally referred. The diet, indeed, which appears to be essential in the latter affection, produces no alleviation of the former; and although, in both cases, hæmatosis is manifestly interfered with, it would seem, that in porphyra hæmorrhagica it may be dependent upon visceral engorgements of a temporary nature, which may be relieved by bloodletting and cathartics, that might be very injurious in the porphyra nautica or true scurvy, which is always dependent upon insufficient nourishment.

### 3. PORPHYRA NAUTICA.

SYNON. Scorbutus, S. nauticus, Purpura nautica, Scurvy, Sea scurvy; *Fr.* Scorbut; *Ger.* Scorbut, Scharbock.

The definition of this variety—which is the true scurvy, for *Land scurvy* and *Sea scurvy* are essentially the same disease—as given by

Dr. Good, is as follows:—"Spots of different hues, intermixed with livid, principally at the roots of the hair; teeth loose; gums spongy and bleeding; breath fetid; debility universal and extreme:" and he adds—"occurs chiefly at sea, after exposure to a moist, cold, and foul atmosphere, with long use of salted food and stagnant water." It is certainly not confined to mariners; for well-marked cases of scurvy have occurred, and prevailed extensively in large inland institutions. An epidemic of this kind in the extensive penitentiary at Milbank, near London, was the occasion of much professional interest, upwards of twenty years ago.

At sea, scorbutic cachexia is far less common than it was formerly, owing to the hygienic precautions that are now taken, and which consist chiefly in the allowance of a larger admixture of animal and vegetable food to the sailors. Ages ago, it was a most formidable affection, and interfered materially with the efficiency of seamen on long voyages. Now, we rarely hear of it. It would appear, also, to have prevailed largely in armies; for we are told, that the army of Saint Louis before Damietta was decimated by it. Occasionally, land scurvy (Fr. *Scorbut de Terre*), is seen in our eleemosynary institutions where a due supply and admixture of food is not permitted, or in countries where they cannot be readily obtained. In a recent interesting and elaborate communication by Dr. J. O. Curran, of Dublin, the writer states, that he had been able to collect from competent observers exclusively in most parts of Ireland, and in several of the principal towns of Great Britain, reports of more than six hundred cases. Of these, 137 were observed in the hospitals of Dublin, and 10 in the practice of Dr. Curran himself.

The author has not witnessed any case of sea scurvy, but he has seen a few cases on land, which presented all the characters assigned to it.

The disease generally comes on gradually, with feelings of general debility, disinclination to motion, and difficulty of breathing on the least exertion. The face becomes of a pale or yellowish hue; the gums are tumid, soft, spongy, and sometimes livid, or they present a blue line scarcely distinguishable from that caused by lead poisoning, and bleed on the slightest friction; or they are sometimes pale and exanguinous, but never natural; the breath is offensive, and the skin dry and rough, but sometimes smooth and shining. If attention be paid to the cutaneous surface, it will generally be found covered with livid spots, which run together, so as to form large blotches, especially about the legs and thighs. The legs swell, and ultimately the whole body becomes œdematous. The muscular parts of the legs and thighs, and still more frequently the insteps and ankles, are more or less indurated, and deep-seated nodular indurations, as large as nutmegs, according to Dr. Curran, can be felt in the calves of the legs, and backs of the thighs. The phenomena differ somewhat in different cases, but essentially resemble those that have been described as characteristic of ANÆMIA. Throughout, excessive pain is usually experienced in the limbs, with total mental prostration, so that the individual is incapable of any intellectual effort. If sores exist, they discharge a



fetid or bloody sanies, and put on characters, which have received the epithet "*scorbutic*,"—the base of the sore being covered with sloughs, and the edges livid, and lined with a soft, bloody fungus, which increases rapidly. In the advanced period, the emaciation is great, and there is a tendency to syncope on the slightest exertion. Hemorrhage takes place,—at times, profusely,—from the different mucous membranes; and the patient dies, in unfavourable cases, either hydropic, or exhausted by some sudden exertion.

In the course of the disease, inflammatory affections may supervene in internal organs, so as to occasion some degree of reaction—as increased heat, greater frequency and force of pulse, &c. This circumstance is of unfavourable import, for there is usually so little vitality in the patient, that they exhaust him the sooner.

On dissection, the same appearances are presented as in porphyra hæmorrhagica. Effusions are found in the different cavities, in the substance of the skin, in the subcutaneous and intermuscular cellular tissue, and in the muscles themselves. At times, the blood is coagulated, but almost always it is extremely fluid; the different solid viscera are softened, and contain collections of blood; the spleen and lungs are engorged in this manner; the heart is flaccid, and the mucous membranes—like the skin—are covered with numerous hemorrhagic patches; but the encephalon and its dependencies are said by M. Rochoux to exhibit no marks of mischief.

Since the advances that have been made in organic chemistry, no opportunities have occurred to examine into the exact condition of that fluid in scurvy; or if they have occurred, they have not been embraced. According to one of the older observers, Rouppe, as the cachexia makes progress, the blood becomes as black as ink, but less plastic;—in other words, the quantity of fibrin diminishes. Such appears to have been the case with the blood of scorbutics described by Lord Anson's surgeons. In other cases, however, described by Lind, it has been found either natural or buffy; and such—as already remarked—is the character it presents at times in porphyra hæmorrhagica. In two cases of purpura recorded by Dr. Parry, blood drawn from the arm, exhibited a tenacious contracted coagulum covered with a thick coat of lymph; and in another instance, referred to by Drs. Babington and Budd, in which the patient, a man forty-five years of age, had most of the symptoms of sea scurvy, such as general cachexia, anasarca of the lower limbs, great depression of spirits, and prostration of strength, extensive ecchymoses on the trunk and extremities, fetid breath, and extravasations of blood from the gums, stomach and bowels, as well as from a large foul ulcer on the leg,—a copious venesection demonstrated, that the blood had not, in any degree, lost its crassis, the crassamentum being covered with a thick buffy coat, and having as much firmness as is usual under the existence of such a state. These cases exhibit that the buffy coat may present itself on blood, which is in a very opposite condition, in other respects, to what is seen in active phlegmasia. In three well-marked cases of scurvy, that occurred in the Dreadnought Hospital Ship, the composition of the blood was found to be as follows:

	1	2	3	4 Healthy blood. (Busk.)
Water, - - -	849.9	835.9	816.2	788.8
Solid constituents, -	150.1	164.1	153.8	211.2
Fibrin, - - -	6.5	4.5	5.9	3.3
Albumen, - - -	84.0	76.6	74.2	67.2
Corpuscles, - - -	47.8	72.3	60.7	133.7
Salts, - - -	9.5	11.5	10.9	6.8

These analyses—as has been well said—disprove the general notion, that in this disease the corpuscles are dissolved in the serum. The separation into serum and clot was as perfect, and took place as rapidly as in healthy blood. In two of the cases the clot was buffed and cupped.

The causes of scurvy are generally sufficiently evident;—in this respect differing from the first two varieties of porphyra. At one time, it was believed to be owing to the continued use of salted animal food; but although it actually occurred under the use of this variety of aliment, the precise cause was probably mistaken. It would appear, indeed, that if omnivorous man—accustomed, that is, by habit to both animal and vegetable food—be restricted to either one or the other, his nutrition falls off, and he may become scorbutic. It is the want of mixed diet, therefore, on long voyages, which gives occasion to scurvy. That salt provisions are not necessary to its production is sufficiently shown, indeed, by the fact, that it has often occurred where no salt provisions were used. In the Milbank Penitentiary, scurvy prevailed extensively in 1819, when the diet consisted of peas, barley soup and brown bread; and in cases of diabetes, in which the author has seen restriction to vegetable diet tried with the view of breaking in upon the morbid condition of the system of nutrition which prevails in that anomalous disease, every symptom of scurvy has been induced. At one period, it was supposed, that the salt of the salted provisions found its way into the circulation, and acted upon the blood in the body, as it does out of it, by preventing its coagulation. The fact, referred to by Dr. Babington, that the disease originates where no salted aliment is used, would be a sufficient reply to this notion; and, moreover, the appearance of the blood, especially as the disease advances, is the reverse of what it would be on the addition of salt, which, instead of making it black, and causing it, on standing, to become thick, muddy, and of a greenish hue, would give it a fine scarlet tint, that would remain permanent until it began to putrefy. In four-fifths of the cases reported to Dr. Curran, the patients had been living on bread and tea, or coffee when attacked; the others had been using grains of various kinds, or grains and flesh or fish, but *in no single instance* could he discover, that green vegetables or potatoes had formed part of their regular dietary.

In the scorbutic cachexia that has recently prevailed in England and Ireland, at least two-thirds of the patients were past the middle period of life; and no case occurred to Dr. Curran under eighteen years of age. Women and children would seem to be comparatively exempt from it. There is reason to believe, that one attack predisposes to another.

The main cause of sea scurvy is, doubtless, the one that has been

assigned above; but the disposition to the disease may be augmented by want of cleanliness, imperfect ventilation, want of due exercise, and a cold damp atmosphere.

**Treatment of the different forms of porphyra.**—In the two first varieties of porphyra, no rule of practice can be laid down, which can be universally applicable; whilst in the last, the treatment is clear. In the simple form of the disease, as in the hemorrhagic, attention must be paid to the condition of the system at the time, and the circumstances under which the individual was attacked. If petechiæ occur in one who has been previously in good health, and who has not been exposed to the ordinary exciting causes,—as insufficient diet, impure air, &c.; and if the accompanying symptoms denote vascular activity, it may be necessary to take blood; but care must be observed not to do this incautiously, or to carry it too far. In almost all such cases, cathartics will be decidedly beneficial; the sulphate of soda has been strongly recommended, but no better combination can be given than sulphate of magnesia with an excess of sulphuric acid, which may be administered so as to keep up an action on the bowels.

R.—Magnes. sulphat. ℥ss.  
Acid. sulphur. dil. gtt. xxx.  
Aquæ f℥vss.—M.

Dose, two tablespoonfuls, three times a day.

This plan may even be necessary in cases of porphyra hæmorrhagica; but it need scarcely be said, that it cannot be admissible where there are undoubted evidences of the existence of an impoverished state of the blood, with unusual laxity of the solids. In this case, remedies become appropriate, which are needed in the true scurvy. The diet, too, must be regulated according to the same rules, and whilst a nutritious course may be appropriate in certain conditions of the system, as in those just referred to, it may be extremely questionable or even improper in others.

In the generality of cases of purpura, after cathartics have been given for a few days, iodide of iron is a valuable preparation. The author has elsewhere remarked, (*New Remedies*, 5th edit. p. 304, Philad. 1846,) that “in oligæmia, where there is paucity of red globules in the blood, and the fluid is altogether too thin, it would seem to be especially indicated, from its property of promoting the coagulation of the blood, and therefore, of inspissating it. Hence, in all cases of scorbutic, hydropic, and other dyscrasies, and in hemorrhages occurring in such pathological conditions of the system, the author has prescribed it largely with the very best effects. It appears to him to be the best remedy we possess wherever a eutrophic and tonic are indicated.”

R.—Ferri iodid. gr. xxiv.  
Aquæ destillat. f℥j.—M.

Dose, a teaspoonful, three times a day.

As regards the treatment of porphyra nautica or true scurvy, it has been already observed, that it is clear; and the mode of prevention—it may be added—obvious. The most important cause—as has been remarked—is defective alimentation, arising either from a change of

diet; or more generally from restricting one, who has been accustomed to both animal and vegetable food, to either of these exclusively. For plenary health, it is necessary, that man should have variety of aliment, and that if he have been accustomed to mixed diet—animal and vegetable—it cannot be abandoned with impunity. In the way of prevention of scurvy, consequently, it is indispensable, that such a diet should be furnished; and, with this view, vegetable substances, as lime-juice, sugar, vinegar, raw potatoes, &c., are allowed in proper proportion on long voyages; and under this system, combined with a due attention to regimen,—as personal cleanliness, warm clothing, proper ventilation, exercise, and avoiding as far as possible the injurious influences of cold and moisture, scurvy has been almost banished from the list of diseases of seamen; and many a surgeon of the navy passes through life without meeting with a single case. In some of our eleemosynary institutions on land, a want of proper attention to the influence of diet and regimen has produced the same effects as at sea, and has required similar remedies. Citric acid, and lemon or orange-juice, being expensive prophylactic and therapeutic agents for charitable institutions, a combination of nitrate of potassa with vinegar, or lemon-juice, has been advised by Drs. Paterson and Cameron; and Dr. Curran states, that the routine treatment of scurvy at the Dublin North Union Hospital, for some months, had been the following mixture, which was attended with decided benefit.

R.—Potass. nitrat. ℥ij.  
 ——— bitartrat. ℥ss.  
 Aceti  
 Theriac. commun. āā f℥ij.  
 Aquæ f℥iv.

Dose, two tablespoonfuls, to be given three times a day.

The medicine has an agreeable taste, and when it was desirable to act on the bowels, it was only necessary to add a little more cream of tartar. “The mixture,”—says Dr. Curran,—“has the great merit of cheapness; but from what I have seen of the treatment of scurvy, I should in all cases, that it was possible to do so, give a very decided preference to the fresh vegetables with lemon-juice.”

When scurvy has broken out, and it is impracticable to obtain a mixed diet, recourse must be had to the use of mineral acids, with bark or sulphate of quinia, or some of the vegetable tonics—gentian, columbo, &c. There is no preparation superior to the cold infusion of bark with acid.

R.—Cinchon. cort. in pulv. crass. ℥j.  
 Aquæ Oj.—Infunde per horas duodecim, cola et adde  
 Acid. sulph. dil. gtt. xxx.

Dose, a fourth part, four times a day.

Iodide of iron, administered as recommended under the variety of porphyra last described, may also be a valuable remedy. Still, much cannot be expected from the therapeutical, unless it can be conjoined with proper hygienical, treatment.

Dr. Budd, has remarked, that mercury, in every form, “should be religiously avoided: even in very small quantities it has been known to produce dangerous salivation.” The remark is, doubtless, just; yet,

in one of the lowest forms of porphyra, which ever fell under the author's care, and in which salivation was accidentally induced by a very small dose of a mercurial cathartic, although severe salivation resulted—very much to the author's regret, and gave rise to very sinister forebodings on his part—the symptoms were certainly not aggravated; and, under a pursuance subsequently of the course above indicated, the patient—a female—entirely recovered.

The local lesions, that present themselves in scurvy, are only evidences of the constitutional affection, but still they may require attention. Mouth-washes of astringent and antiseptic substances,—as of tincture of myrrh,<sup>a</sup> cinchona with muriatic acid,<sup>b</sup> or of chlorinated lime,<sup>c</sup> or creasote,<sup>d</sup> or iodide of iron,<sup>e</sup> are often used with advantage.

<sup>a</sup> R.—Tinct. myrrhæ f ʒss.  
Mellis despumat. ʒiij.  
Aquæ vel Aquæ rosæ f ʒiv.—M.

<sup>b</sup> R.—Calcis chlorin. gr. xv.—xxx.  
Mucilag. acaciæ f ʒj.  
Mellis ʒiij.  
Aquæ f ʒiiss.—M.

<sup>c</sup> R.—Infus. cinchon. f ʒiv.  
Mellis despumat. ʒiij.  
Acid. muriat. gtt. xx.—M.

<sup>d</sup> R.—Creasot. gtt. iv.  
Mellis ʒiij.  
Aquæ destillat. f ʒiiss.—M.

<sup>e</sup> R.—Ferri iodid. ʒj.  
Aquæ f ʒiv.—M.

Similar applications may be made to scorbutic ulcers; but it must be borne in mind, that all these local affections can only be combated successfully by the union of appropriate local means, with such as are directed to the condition of the constitution on which they are dependent.

Amongst the Milanese, a singular endemic affection prevails, which has received various appellations, but is generally classed amongst cutaneous diseases. This is the *Pellagra*, *Lepra Mediolanensis*, *L. Lombardica*, *Scorbutus Alpinus*, *Paralysis scorbutica*, *Mania pellagria*, *Dermatagra*, *Erythema endemicum sive pellagrum*; Fr. *Mal de Misère*; Italian, *Insolazione de primavera*, *Mal rosso*, *Mal del sole*, *Mal di miseria*; Ger. *Sommerseuche*.

According to M. Willemin, who has recently written an elaborate memoir on the sporadic pellagra of Paris, the disease is seen there occasionally, as well as in the South of France; and it has occurred at Vienna, at Jena in Westphalia, and in Persia.

Although termed *Scorbutus Alpinus*—the disease is not a scurvy, yet it belongs properly to the division of cachexiæ. It commences in the spring, with signs of gastric and cephalic disturbance, followed by an eruption of small red spots or patches on the parts that are exposed to the sun,—whence it is called by the Italians *Erythema solare*. These patches, which are at first shining, are soon covered by scales similar to those of psoriasis, beneath which the skin becomes rough, thick, and chapped. In the autumn, the eruption disappears, but the general health continues to decline. In the following spring, the eruption recurs with greater severity, and the constitutional symptoms become aggravated; the bowels especially are greatly disordered; epileptic paroxysms supervene, and, not unfrequently, the miserable sufferer becomes idiotic or insane; and sooner or later sinks to death.

At times, according to M. Lagneau, the concomitant insanity assumes the religious form, with tendency to suicide, degenerating occasionally into homicidal monomania, which directs itself by preference to children. Numerous examinations of the dead, made in the Hospital Saint Ambrosia at Milan, by MM. Panceri—father and son—assisted by M. Brière de Boismont, established most incontestably, that these mental aberrations were owing to chronic meningitis, often extending into the vertebral canal. M. Brière de Boismont likewise found the digestive organs of all manifestly diseased, and presenting evident traces of inflammation. From a careful study of the malady, in the districts where it reigned endemico-epidemicly, he regards it to be, at times, a primary irritation of the digestive organs, complicated with irritation of the nervous and cutaneous systems; and, at others, a disease of innervation, with secondary lesion of the digestive functions. In many cases, the nervous system alone is attacked. The affection of the skin, which is sometimes wanting, and not always in a ratio, as regards intensity, with the other symptoms—and which may even disappear without the disease being cured—is evidently, he thinks, consecutive in all cases without exception. He regards it as an inflammatory condition.

The disease is not communicable. It is rarely met with except amongst the poorer classes, and with them all ages are liable to it. It has been ascribed to diseased Indian corn; but there is no sufficient reason for the belief, in the opinion of the author. It is not known in this country.

Removal from the causes that induce it affords the chief—if not the only—prospect of cure. M. Brière de Boismont thinks the antiphlogistic treatment is the most successful.

### III. CHLOROTIC CACHEXIA.

SYNON. Cachexia chlorotica, Chlorosis, Chlorasma, Dyspepsia chlorosis, Anepithymia chlorosis, Icterus albus, Febris alba, F. amatoria, F. virginum, Cachexia virginum, Green sickness; *Fr.* Chlorose, Pales couleurs; *Ger.* Weissucht, Bleichsucht, Jungfernkrankheit.

Chlorosis has been a stumbling block to the nosologist; yet it seems impossible to refer it—with propriety—to any other position than the cachexiæ. This is done, indeed, at the present day, by many of the best pathologists. Appearing in females generally,—and, according to some, exclusively,—and being often associated with retention, or obstruction of the catamenia, or some morbid condition of the menstrual function, it has been by many, and still is, associated with amenorrhœa. Dr. Good has placed it in the order *Orgastica*—under diseases in which there is “organic or constitutional infirmity, disordering the power or the desire of procreating;” and he defines chlorosis as follows—“Pale, lurid complexion; languor, listlessness; depraved appetite and digestion; menses irregular.” Yet, the cachectic condition, which is met with in chlorosis, certainly exists at times in those of the other sex; and, consequently, the definition ought to embrace the pathological state of the system of nutrition, without regard to any derangement of the sexual functions. Chlorosis has, indeed, been esteemed a variety of hysteria; but the affections are

little alike. By others, again, it has been referred to *adynamia* of the digestive tube, whilst others consider it to be dependent upon impaired or faulty hæmatosis; and, in the obscurity of the subject, it has been referred to a *vice* of innervation in the ganglionic system, which is supposed to preside over the digestive, circulatory, nutritive, and genital functions.

When the disease is once developed, every function becomes more or less affected; and not only is the blood of morbid character, but the various tissues, which it bathes, become equally implicated; so that it properly falls under the division in which it is placed in this work.

**Diagnosis.**—At the commencement of an attack of chlorosis, the patient feels unusual languor, with great depression of spirits,—crying frequently without any obvious motive; and almost always suffering under more or less dyspnœa and yawning: the circulatory function, also, exhibits aberrations, and palpitations are frequent. Gradually, the disease augments; the countenance becomes pale; the eyelids puffy, and, in the morning especially, they are surrounded by a blackish circle; and the sclerotica is extremely white. The anæmic condition of the blood is not always, however, indicated by pallid lips and surface. The author attended a young female, who died of splenic cachexia and dropsy, in whom the complexion, until a short time before her death was florid; and M. Romberg has recently referred to the case of a dressmaker, aged 24, whose face was so florid, that the cerebral and cardiac phenomena, observed in anæmia, were at first pronounced to be dependent on disease of the heart, and the patient was treated accordingly, without any good result. On further inquiry, it was found that she had been bled seventy-five times. Steel, and chalybeate mineral waters were then prescribed, with the best effects. The surface is usually dry and lurid; the pulse very rapid, generally weak, but sometimes quick, and with a degree of apparent force that may deceive as in anæmia. Along with these phenomena, nutrition falls off; the flesh is soft and flabby; and hydropic infiltrations take place into the cellular membrane, and similar effusions into the cavities. Sooner or later, the appetite becomes greatly diminished, and often wholly annihilated; or it undergoes the most wonderful mutations,—substances being greedily desired and enjoyed, that are possessed of no nutritive properties whatever,—such as chalk, earth, and ashes. At other times, there is a marked desire for acids. The author has had intelligent female patients, who preferred eating slate-pencils to any other article. When these depraved appetites exist, the digestion is generally impaired, and there may be more or less febrile movement, with alternations of constipation and diarrhœa. The urine, too, is usually small in quantity, and watery, as is commonly the case in nervous diseases. Occasionally, hemorrhages take place from the mucous membranes, as described under PORPHYRA, and under ANÆMIA—of which chlorosis is unquestionably an occasional form.

When chlorosis occurs in the female—as is generally the case—it almost always happens, that there is leucorrhœa, with a total suppression or marked diminution of the catamenia, and when these do appear,

the fluid appears to contain but little colouring matter, and less fibrin than usual. At times, however, the catamenia are more copious than usual, and continue for a longer period. The fluid is aqueous, scarcely tinging the linen. To this form of the disease, M. Trousseau has given the name *Chlorose ménorrhagique*.

The symptoms, which may be properly referred to the nervous system,—as dulness of intellect, fanciful notions and projects; insomnia, or distressing dreams, and other hysteroid or nervous phenomena,—persist throughout the whole disease; and there is generally headache with tinnitus aurium, neuralgic pains, and palpitations in the epigastric or cardiac region. The encephalic phenomena have been ascribed by Dr. Marshall Hall to the influence of the state of bloodlessness on the encephalon. In unfavourable cases, the patient becomes gradually emaciated, and dies hydropic, or worn down by hectic. In the majority of cases, however, the disease terminates favourably under appropriate management;—but it is necessary that the treatment—therapeutical as well as hygienical—should be persevered in for a considerable period.

Amongst the strange phenomena, that attend this singular malady, may be reckoned—the signs afforded by auscultation of the bloodvessels. One of these has been termed *bruit de diable* in consequence of its resemblance to that of the *diable* or humming top of children. It is heard most frequently along the carotid and subclavian arteries; at times, also, in the crural arteries, but never to the same degree. Commonly, it is heard on one side only. The *bruit de diable* disappears immediately on compressing the artery below the part at which it is heard; disappears, also, on pressing the artery forcibly with the stethoscope; and, what is surprising, the *bruit* often appears and disappears from one minute to another, without our being able to detect the cause of these alternations. At times, the mere change of the patient's position is sufficient to effect this. "During a year and a half, that I have punctually attended the clinical visits of M. Bouillaud," says a practised auscultator, M. Raciborski, "I have observed more than thirty times the *bruit de diable*, and have not seen a single patient affected with chlorosis that has not presented it." In numerous cases, observed by M. Romberg, of Berlin, the characteristic bellows sound was never absent from one or other carotid; and of twelve examples, it was heard in nine in the right carotid only. A thrill could also be felt with the finger.

It would appear that this sound is connected with the predominance of the watery portions of the blood, but the precise mechanism of its production is not very intelligible. The noise has been observed to follow copious bloodletting, and to disappear when the blood has regained its properties under the use of tonics. M. Raciborski remarks, that the *sifflement musical* is more frequent in thin and nervous persons affected with chlorosis; and the *bruit de diable*, in the stouter.

From an analysis of 88 cases of anæmia, in which there was a continuous or intermittent sound heard over the carotids, M. Andral has endeavoured to establish a ratio between the diminution of the



globules, and the appearance of such sound. Of the 88 cases, the *souffle* was continuous in 56; intermittent in 32. Of the 56 cases, in which the sound represented the *bruit de diable*,—in 28 the proportion of globules was not above 80; and descended as low as 21; in 13, the ratio was between 80 and 100; in 10, it rose to between 100 and 115; and in 5, it rose from 115 to 125. In the 32 cases in which the sound was intermittent, there were only 3 in which the proportion of globules was below 80 (76, 77, 77); 13 from 80 to 100; 8 from 100 to 115, and 8 from 115 to 126. It would appear, consequently, as observed by M. Andral, that in different persons, the arterial *souffle* does not always appear with the same degree of depression of the proportion of globules. He considers, however, that the following rules exist on this subject. *First*. When the ratio of globules has gone below 80, the *bruit de souffle* exists in the arteries continuously. To this law he has not seen an exception. *Secondly*. When the globules remain above 80, the *bruit de souffle* may still exhibit itself; but it is no longer constant. It is still heard, when the proportion of globules varies between 80 and 100; and occasionally when it is above 100.

Whatever may be the character of the disease in which the diminution in the amount of the globules exists, this *bruit de souffle* is heard in the carotids. M. Andral has detected it in putrid and eruptive fevers, pneumonia, acute rheumatism, and in a great number of chronic diseases; but in no case did it appear except with the proportion of globules described above. The intensity of the sound is generally in a ratio with the degree of diminution of the globules. In 22 cases of chlorosis, M. Andral found it intermittent in 8, the proportion of globules oscillating between 117 and 77; continuous in 14, the proportion of globules varying between 113 and 28.

When blood is drawn in chlorosis, it commonly possesses the qualities referred to above. It is thin, light-coloured, and deficient in red particles. The clot is of less proportion to the serum than in health. To the deficiency of red particles are assigned, the diminished temperature of the surface; the pallor and waxy appearance, as well as the want of colour in the catamenia, and the pale stain, which the blood, in cases of epistaxis, leaves upon linen. Examined by the microscope, it exhibits a manifest want of colour in the red corpuscles; greater transparency, and, according to M. Donné, an appreciable diminution in their number; but there is no alteration in their shape.

The urine of chlorosis, according to M. Simon, is usually pale, of low specific gravity, and of a slightly acid reaction,—in these respects resembling the urine of those who have lost a considerable quantity of blood, or the form of urine called “nervous” which is seen in attacks of hysteria. It is poor in urea,—in this respect resembling the urine of typhus, from which it differs, however, in containing only a small quantity of uric acid, and a large amount of fixed salts.

Some analyses have been made of chlorotic blood. In two well-marked cases, referred to by Dr. Babington, it contained 871 and 852 parts in a thousand of water, instead of 780, the healthy standard;

and the colouring matter amounted to 48·7 and 52 respectively, instead of 127. The albumen and salts were in the usual proportion. In other cases, which occurred to different observers, the following were the results:

	Cruor.	Serum.	Fibrin.	Water.	Iron.	Total.
1. Chlorotic female,	83·70	83·45	6·35	832·45	4·35	1000
2. Healthy do.	134·00	88·20	25·70	743·90	8·20	1000

As a general rule—it may be inferred from the experiments of MM. Andral and Gavarret—the proportion of red particles is diminished, whilst that of the fibrin remains the same; so that the clot, although small, may be firm, and it not unfrequently exhibits the buffy coat. In extreme cases of the disease, the red globules have been found as low as 27. In two cases of chlorosis observed by M. Andral, the condition of the globules seemed to be modified. They were much smaller than usual; and some of them appeared broken, as it were, and scattered in fragments in the field of the microscope. In one of the cases that recovered, he had an opportunity of noticing the condition of the blood in health, which presented perfect globules very different from those he had observed some months previously. MM. Becquerel and Rodier, however, analyzed the blood of two girls in whom all the symptoms of chlorosis existed, including the *bruit de diable* in the carotids, and yet there was no diminution of the corpuscles, or of the solid constituents generally.

It has been remarked, that in a first degree of chlorosis, the external evidences may be so slight that the case might at first be mistaken for one of plethora; on analysis, however, there are found fewer red globules than in the healthy state, although the diminution, as yet, may be inconsiderable. In the advanced stages of the disease, the globules are found farther diminished than in any other disease, except where the system has been exhausted by copious hemorrhage. In one of these latter cases, the proportion of globules was found by MM. Andral and Gavarret to have descended from 127 in a thousand—the normal proportion—to 21. In uncomplicated chlorosis, the proportion has been found as low as 38; but, generally, it is about 50.

The blood of chlorotic patients is not unfrequently buffy, owing to its preserving its fibrin, whilst the quantity of red globules is diminished: there is, consequently, as in inflammation, an excess of fibrin in proportion to the globules.

**Causes.**—The disease occurs most frequently in young females about the period of puberty, and is generally associated with retention or imperfect establishment of the catamenia. These circumstances are, indeed, so commonly associated with chlorosis, that the term, with the public, is usually considered to be restricted exclusively to the condition as occurring in young females, in whom menstruation has been imperfectly established. Married women, however, and, even males have been affected with it, although this does not often happen.

Every agency, which is debilitating to the economy,—as food difficult of digestion, and containing but little nutriment; dwelling in malarious and other unhealthy localities, where cold and moisture

predominate, must, also, be regarded as amongst the predisponent causes. It is affirmed, too, that this form of cachexia has been induced in young women, who have been in the habit of drinking vinegar, with the view of diminishing their embonpoint.

**Pathological Characters.**—When chlorosis proves fatal, it is generally by the supervention of some organic mischief. On dissection, no appearances characteristic of the disease are met with, unless it be the altered character of the blood. In some cases, it is affirmed, by M. Lieutaud, the veins and capillary vessels have been found almost exanguious. The organic mischief, observed in the liver and spleen; the tubercles in the lungs; the serous effusions into the cavities of the pericardium, pleura, peritoneum and arachnoid, in those who have died of chlorosis, are not pathognomonic, but mere complications, which are met with under various pathological conditions.

**Treatment.**—This may be conveniently divided into, first, the hygienical, and, secondly, the therapeutical.

*First.* It will, of course, be all-important to remove the patient from the action of predisposing and exciting influences; to regulate the diet, according to the circumstances of the case; to change an unfavourable locality for one that is more suitable; and to direct proper exercise, which, of itself, has appeared to cure many cases. It is impracticable to lay down any rules of diet or regimen that are applicable to all cases; but the history of the disease will have shown, that a generous diet must usually be appropriate,—the essential object being to modify and render more energetic the whole function of nutrition, and especially by improving hæmatosis. Perhaps, there is no case in which a change of all the influences surrounding the individual is more important, and hence the well known value of travelling air and exercise. As the preparations of iron—it will be seen presently—are valuable therapeutical agents in chlorosis, it may be well to encourage the patient to visit some chalybeate springs, of which there are so many in this country; but as the benefit to be derived will be greatly augmented by a thorough change of atmospheric influences, those springs that are situate at a distance from the place in which the patient has dwelt, and the air of which is essentially different from the one to which she has been accustomed, had better be selected.

Upon the same principle, the revulsion, induced by the state of utero-gestation, will frequently completely remove this cachexia,—a fact which has been mentioned even by Hippocrates. Should, however, the constitution of the patient be much shaken by the continuance and severity of the disease, it may be well to advise that she should be subjected to an appropriate treatment before she marries.

*Secondly.* From the general characters of chlorosis, tonics are clearly indicated, and of these, the preparations of iron have been found most serviceable. There is scarcely, however, a vegetable or mineral tonic that has not been given alone or associated with the preparations of iron. A recent writer, M. Carrère, announces, as the result of an extensive clinical experience, that in almost every case, in which a chalybeate preparation has been found decidedly useful, one single symptom has been constant and uniform, and has always served

as a touchstone for the treatment to be employed,—the “blowing sound” or *bruit de diable*, in the large arterial trunks. Of the preparations of iron, the one most employed, of late years, is the sub-carbonate, which has been given both in the form of protocarbonate, and of the ordinary subcarbonate of the shops,—the sesquioxide of the London Pharmacopœia. Formerly, Griffith’s mixture—the *mistura ferri composita*—and the *pilulæ ferri compositæ* of the pharmacopœias, were relied on mainly; but an objection, brought against these, has been, that the protocarbonate readily acquires oxygen, and becomes converted into the subcarbonate or sesquioxide, so that the practitioner may be, in reality, administering a different preparation from that which he intended. To obviate this defect, M. Vallet has suggested, that the protocarbonate should be mixed with saccharine matter, which prevents the absorption of oxygen from the air. In the last edition of the Pharmacopœia of the United States, (1842) a formula has been introduced, for the preparation of the “ferruginous pills of Vallet,” the *pilulæ ferri carbonatis*. (*New Remedies*, 5th edition, p. 318, Philada. 1846.) The author has not, from his experience, been able to assign a higher place to this article than to the subcarbonate, and other preparations of iron. It remains, indeed, to be seen, whether the conversion into the sesquioxide renders the preparation less efficacious. The dose of the protocarbonate is commonly from twelve to twenty grains in the course of the twenty-four hours.

A medicine, which greatly resembles the *Pilulæ Ferri Compositæ* of the pharmacopœias, and in which the iron, when newly prepared, is in the state of protocarbonate, has acquired great reputation in the south of France, on account of its beneficial agency in this disease. It is given in the form of pill, and is called after its inventor, “*Blaud’s Pills*.” They are prepared as follows:

“Take of gum tragacanth, in powder, six grains; water, one drachm; macerate in a glass or porcelain mortar, until a thick mucilage is formed; and if it be wished to prevent the formation of peroxide of iron, and to make the pills similar to those of Vallet, substitute, says M. Blaud, a drachm of powdered sugar for the mucilage. Add, afterwards, sulphate of iron, in powder, half an ounce. Beat well, until the mixture is quite homogeneous, and add subcarbonate of potassa, half an ounce. Beat until the mass, which soon becomes of a yellowish-green colour, passes to a deep-green, and assumes a soft consistence. Divide into forty-eight [?] pills, which M. Blaud considers to be sufficient for the cure of a chlorotic patient.”

M. Blaud commences with his “antichlorotic pills,” in the dose of one a day; and in the course of a few days gives two, and afterwards three daily. Although he is aware of the chemical conversion that takes place, and that, from being pills of the protocarbonate, they become those of the sesquioxide, he maintains, very properly, that it is to therapeutical observation, and not to chemical experiments, that we must refer, in order to learn accurately the medical properties of any agent. “What signifies it to practitioners,” he exclaims, “that my pills contain little or no protoxide of iron, provided they cure chlorosis!”

The citrate of iron has been introduced into practice as an elegant preparation, and it has been frequently prescribed by the author with great advantage, in the dose of ten or fifteen grains or more, two or three times a day. (*New Remedies*, edit. cit. p. 291.)

Iodide of iron has also been found highly serviceable in chlorosis occurring in strumous habits, and it may be administered as directed under PORPHYRA. Dr. Ashwell associates it with tonics.

R.—Ferri iodid. gr. xvj.  
Tinct. colomb. seu  
— gentian. comp f ʒi.  
Aque f ʒvij. M.

Dose, two tablepoonsful two or three times a day.

Lactate of iron has been brought forward with high encomiums. Some, indeed, are disposed to refer the beneficial agency of the protocarbonate to its becoming lactate of iron in the stomach, by uniting with the lactic, which is presumed to be one of the gastric acids. This idea has led them to administer the lactate of iron itself; and numerous others have followed their example, and successfully. The freshly-prepared lactate of iron is introduced into lozenges, in which the sugar prevents the superoxidation of the iron, and preserves the medicine. MM. Andral and Fouquier seldom exceed twelve grains of the lactate in the twenty-four hours, and M. Bouillaud never gives more than twenty. In the administration of all the preparations of iron, they should be begun with in a smaller dose, and be gradually carried to a considerable extent.

M. Raciborski recommends iron reduced by means of hydrogen to the metallic state. This is effected by passing a stream of hydrogen gas over an oxide of iron heated to redness in a gun-barrel; in which process, the oxygen of the iron uniting with the hydrogen flies off as water, leaving the metal reduced, and impalpably fine. MM. Quevenne and Miquelard, who proposed this formula, assert, that it comprises the two great desiderata in the chalybeates,—very great activity with absolute insipidity.

After iron has been administered for some time, if the blood be examined, the proportion of the globules will be found to have augmented. In one recorded case, the proportion promptly rose from 46 to 95 in the thousand. The other elements of the blood, except the water, which increases in consequence of the diminution of the globules, remain—it would appear—unchanged. Thus, the solid matters of the serum, varying from 94 to 75, are maintained in their normal proportion, and the fibrin does not diminish with the progress of the disease, or increase under the action of iron. This, however, applies to simple chlorosis, for if it be complicated with inflammation, there will be a marked increase in the proportion of the fibrin.

If, in the course of the disease, hyperæmia should exist in any internal organ, it may be necessary to take blood either generally or locally; but in the state of the system that usually prevails in chlorosis ultimate good effects cannot result from any copious depletion, and therefore blood should only be drawn where it appears to be indispensable. It may be advisable, also, to administer occasional emetics—partly with the view of acting as simple evacnants, and partly to induce a new action in the system. With the same view, cathartics may be beneficially employed; but it need scarcely be said, that in advanced periods of the disease, when all the functions languish, care must be taken not to use them too frequently. The good effects of sea-sick-

ness, occasionally observed, have led to the greater employment of emetics; but the results were often probably caused rather by the revulsion from change of air and other circumstances, than by the mere evacuation of the stomach.

As constipation is not an uncommon accompaniment of chlorosis, and may have some tendency to react on, and keep up, the disease, it has been advised to administer cathartics freely. They may almost always be premised with advantage before tonics, and may be needed in the progress of the treatment; but reliance cannot be placed on them to effect a cure.

#### IV. AFRICAN CACHEXIA.

SYNON. Cachexia Africana, Leucophlegmatia Æthiopum, Chlorosis Æthiopum, African cachexy, Negro cachexy, Dirt eating; *Fr.* Mal d'Estomac; *Ger.* Dunssucht der Neger, Erdessen, Kothessen der Neger.

This cachexy belongs to the same condition of the system as the chlorotic. It prevails amongst the coloured population of certain hot climates, and appears to affect the Negro race exclusively. According to Professor Carpenter, of New Orleans, it has long been known in tropical America as the most fatal disease to which that race is subject, and is considered to be as certainly fatal as phthisis pulmonalis. It not unfrequently occurs amongst the negroes of the southern portions of the United States, and, according to the same authority, there have been instances in Louisiana of large planting establishments having been entirely broken up by the extensive mortality amongst the slaves from this cachexy.

**Diagnosis.**—The most marked phenomenon—as the name of the disease imports—is a depravation of appetite, causing an irresistible desire to eat substances of an indigestible, and at times disgusting character. The articles most frequently chosen, are clay, earth, mortar, dust, ashes, chalk, slate, bricks, and shells, which are often devoured in enormous quantities,—whilst animal and vegetable aliment is regarded with the utmost disgust. The other main phenomena are,—more or less uneasiness in the stomach; whiteness of tongue and gums; dyspnœa on the slightest exertion; great inactivity and debility; despondency; desire to be alone; change of colour of the surface, which, if normally black, becomes of a brownish green or olive hue. The blood is of course impoverished, and exhibits the general characters described under CHLOROTIC CACHEXIA; the powers gradually fail; the patient becomes anasarcaous, and ultimately dies as in other cases of anæmia.

Dr. Carpenter agrees with Dr. Craigin in regarding as symptoms of primary importance—the peculiarly white and pallid appearance of the palms of the hands and soles of the feet, but more particularly the bleached and bloodless aspect of the inside of the lips, the gums, the tongue, and lining membrane of the mouth generally. The tongue and gums often have the peculiar translucent and pallid hue of white wax. These appearances have never been absent in any case of confirmed and habitual dirt-eating, that has come under Dr. Carpenter's observation; and from them—if existing in the marked degree that is common in this disease, and accompanied by the general aspect they

present—he feels safe in pronouncing unhesitatingly as to the existence of the habit.

Cases of cure would seem to be extremely rare, owing to the obstinacy with which the habit is persevered in. The prognosis, therefore, must be regarded as very unfavourable. The disease generally continues for months and even years, but it has terminated unfavourably in a few weeks.

**Causes.**—The disease occurs in both sexes, and at almost all ages, sometimes as early as six or seven years. Insufficient aliment; unhealthy dwellings; a damp climate, and over work, have been esteemed its great causes; but despondency from hard treatment, would seem to have much to do with it: Dr. Carpenter, indeed, is convinced, that, in the Southern States, severity of treatment, giving rise to depressing emotions, and to a sense of degradation, sometimes concurs with improper and inadequate fare in favouring its production. The despondency and falling off of the powers of nutrition that accompany it are analogous to the same phenomena that accompany nostalgia.

**Pathological Characters.**—On examining the body of one who has died of this cachexia, the muscles are observed to be peculiarly pale and anæmic, and the same anæmic character is seen in the stomach. Dr. Inray, who has given an account of the affection as it occurs amongst the negroes of Dominica, and who considers that its chief characteristics seem to be derangement of the functions of digestion and assimilation, describes the mucous membrane of the stomach and intestines as bloodless, and, at times, softened, whilst occasionally there is ulceration with scirrhus thickening near the pylorus. The mesenteric glands are frequently enlarged. The liver is often indurated; and the spleen large and soft; the heart soft and flabby; the blood thin, and containing very few red corpuscles, and generally the products of dropsy are perceptible;—in short, all the morbid appearances that might be expected in death from anæmia.

**Treatment.**—It is of course essential, that the habit of dirt-eating should be prevented. This must be done by proper persuasion, but not by coercion. At the same time, it may be necessary to cause the patient to wear a close wire mask secured by a lock. This requires no confinement to the house, and is said to be the principal means of prevention employed in the West Indies, and Dr. Carpenter says he has been informed, that it has been adopted with advantage in some parts of Louisiana. He states, moreover, that instances have come to his knowledge, in which other habits have been substituted by perseverance: for example, they have been induced to chew tobacco, and have, at times, discontinued the eating of improper substances, as soon as the new habit had become established. The diet, of course, should be regulated, and consist of animal food with a due admixture of vegetables. Tonics—especially chalybeates—with change of air, where practicable, cold bathing, &c., must be advised; everything, in fact, which is calculated to improve the general health, and is adapted for the removal of chlorotic cachexia. An important point is to excite new impressions in the nervous system, so as to break in upon the

despondency, and prevent its distressing and almost invariably fatal results.

#### V. RHACHITIC CACHEXIA.

Under this head may be comprised the consideration of two forms of softening of the bony tissue,—rickets, and osteomalacia of the adult. By some pathologists, these are treated of as the same affection; but they may be properly separated, inasmuch as they differ in some essential respects from each other. Whilst the former exists in infancy, the latter is a disease of the adult age; and, moreover, in their semeiology, progress, &c., they are by no means identical.

##### 1. RICKETS.

SYNON. Rhachitis, Rachitis, Cyrtosis rachia, Morbus Anglicus, Osteomalacia infantum; *Fr.* Rachitisme, Nouure; *Ger.* Englische Krankheit, Zweiwuchs, Doppelte oder abgesetzte Glieder, Verknüpfung.

A variety of opinions has been entertained in regard to the pathology of rickets. It was at one period considered to be allied to syphilis. Others have thought it often originates in scurvy; but the closest relationship would appear to be between it and scrophula. Yet that it is different from scrophulosis and tuberculosis is sufficiently shown by the researches of MM. Ruzf and Guersant, which have demonstrated, that tuberculosis is much less common in rickety children than in any other. That it is a cachexia, or vitiated condition of the solid and fluid constituents of the body, and of the system of nutrition generally, cannot admit of a question, and, accordingly, it has been classed by a modern nosologist, Dr. Good, as a genus in his order *Dysthetica* or *Cachexies*. M. Rostan thinks there is no proof, that the disease is dependent upon a morbid condition of the fluids, but that it is owing to a general condition of the system, which is but little known.

Although the disease must probably have existed at all times, it does not appear to have been described until the year 1650, when an accurate account was given of it by Glisson. It is not, at the present day, a very common disease in England, although called the "*English disease*," and is not often met with in this country.

**Diagnosis.**—One of the earliest symptoms of rickets is an unnatural softness of the flesh, with progressive emaciation, although the appetite may be unimpaired, and sufficient aliment be taken. The countenance becomes sallow; the abdomen protuberant; and the stools are often frequent and unhealthy. If the disease exist during the period of dentition, the process goes on slowly, and the teeth as they appear, are manifestly unsound, and soon become loose and carious. But the modified condition of the osseous system is the great characteristic of the affection. Ossification is imperfectly accomplished; the fontanelles and sutures are more open than in strong vigorous children: and the head appears large in proportion to the rest of the body. The sternum is prominent, so that the individual is what is termed "chicken-breasted;" and if an examination be made, it will be found, that this is partly owing to a forward deviation of the vertebral column. The extremities of the long bones become spongy, and the joints, consequently, appear swollen. This is usually most marked in the wrists, ankles,



and knees. As the disease advances, the bones become so soft as to be unable to bear the weight of the body; and for this reason, as well as owing to the action of the muscles inserted into them, they become bent; at times, in various directions. The vertebral column, in which so many efforts centre, suffers especially, and the child becomes hump-backed. The pelvis, too, often suffers, and deformities arise, which, in the female, may give occasion to those difficult cases to the obstetrician, in which delivery cannot be effected by the natural passages.

The urine in rickets has been observed to vary much in its composition from the normal type,—the deviations consisting chiefly in the diminution of urea and of uric acid, and in the increase of the salts. The colour of the urine is generally either pale, or differs but little from the healthy appearance. The free acid sometimes, however, increases to an extraordinary degree. The phosphates exceed the healthy average, and a considerable sediment of oxalate of lime is by no means uncommon.

In the form of endemic rickets—if it may be so called—which occurs at the foot of the Simplon, and is known by the name *Cretinism*—the *Cyrtosis cretinismus* of Good—the head is usually so small and misshapen, that the intellectual faculties are incapable of development, and the individual constantly remains idiotic; but, in slighter cases of rickety cachexia it not unfrequently happens, that there is unusual mental manifestation, and that the young subjects of it astonish by their precocity.

The disease is not a fatal one. In the generality of cases, nutrition improves; and with it, the condition of the whole system. One great danger is the supervention of serious maladies before the improvement of the constitution has taken place, under which the patient may succumb. Aneurism and hypertrophy of the right heart are said by M. Rostan to be the most frequent results; but statistical knowledge on this subject is insufficient to enable us to infer anything positively.

When the distortion of the limbs has not proceeded very far, the cachexia may be gradually got rid of; and, in the progress of childhood, and still more of adolescence, there may be little or no appearance of deformity; but in bad cases, and especially if the child pass the first four years of life without any decided evidences of improvement, he is apt to continue a miserable object for life.

**Causes.**—Although children may unquestionably be born with a predisposition to rickets, they rarely exhibit any evidence of it, until towards the termination of the first year. At first, the progress of the disease is very slow, and almost imperceptible. Although, however, there may be no outward appearance of scrophula in the fœtus in utero, there must be imperfect formation; and if we regard scrophula to consist in an arrest or insufficiency of development, the view would seem to apply *à fortiori* to rickets. Dr. Geo. Gregory doubts, whether the constitution of parents have anything to do with the production of the disease, as inattention and neglect are, he conceives, quite sufficient to account for the phenomena. The last remark is true; but we have as little doubt that much depends upon the condition of the parents, and that the Horatian observation, “*fortes creantur fortibus et bonis,*”

is true within certain limits. (See the author's *Human Physiology*, 6th edit. ii. p. 442: Philad. 1846.) A recent writer, M. Most, has remarked, that he has often noticed that the children of mothers, who had been rickety in their childhood, are particularly subject to gastro-malacosis at an after period. The connexion does not appear to be very close between those diseases, and the remark requires farther observation. It is fair to presume, that parents who have singly or together laboured under some cachectic vice, may impress their offspring with defective plastic energy; and, therefore, that diseases—like the one now under consideration—may have their foundation in this manner. But although a predisposition may be thus laid in organization, such predisposition, as in similar cases, requires to be excited into action before the mischief can manifest itself. The most common occasional causes would seem to be—faulty nursing, and all those exciting influences which have been pointed out as productive of scrophulous diseases. The affection is noticed chiefly where children cannot obtain sufficient or appropriate nourishment, and where they are restricted from solar light and air, in ill-ventilated, and often damp apartments. Hence, it prevails chiefly in the lower ranks of life; and, amongst the children of those better off in the world, it is seen in such as are compelled to leave the breast, and are fed frequently on diet unsuitable to their age and condition. The milk of nurses, who are addicted to the use of spirituous liquors, would appear to have often induced it, especially where a predisposition, derived from progenitors, existed.

In many of the large manufacturing establishments of Great Britain, the children are proverbially misshapen and unhealthy. When the subject of the health of children in such establishments was brought before the British Parliament, some years ago, by Sir Robert Peel, Mr. Owen, of New Lanark, stated, that although those employed in his manufactory were extremely well fed, clothed and lodged; looked fresh, and, to a superficial observer, were healthy, yet their limbs were generally deformed; their growth stunted, and they were incapable of making much progress in the first rudiments of education. On the same inquiry, Sir A. Cooper stated, that according to his experience, the result of confinement is not only to stunt the growth, but to produce deformity.

Of 346 rickety children, observed by M. Guérin, 209 had been attacked with the disease at from one to three years of age; 3 cases only had occurred before birth, and 34 at from four to twelve years of age. Girls appeared to be more liable to it than boys. Of the 346 children referred to, 198 were females, and 148 males.

**Pathological Characters.**—Of the essence of the rachitic cachexia, pathological anatomy affords us no more information than it does of the scrophulous. When the bones are examined, they are found to possess a deficiency of earthy matter, and, therefore, have not their natural firmness. 100 parts of the dry tibia of a healthy subject of the age of fifteen were found, by Dr. John Davy, to yield 46.4 of animal matter; and 53.6 of earthy; whilst the same quantity of the dry tibia of a rickety child contained 74 parts of animal, and 26 of earthy

substance. Analyses with analogous results, have also been made by Lehmann, Ragsky, and Von Bibra.

Not only are rickety bones found deformed, but they have undergone an arrest of development, which is especially remarkable in the long bones of the lower extremities, whilst those of the upper having gone on increasing a monstrous disproportion exists between the upper and the lower limbs. M. Guérin has shown, that the reduction of growth constantly takes place from below upwards. In the first stage of the disease, the same observer found the bones—especially the long bones—remarkable for the large quantity of black blood entering them, and oozing out, when they were cut longitudinally or transversely. The blood did not appear to be contained in the vessels, but was effused into the medullary canal, under the medullary membrane, into the spongy tissue of the apophyses and epiphyses, under the periosteum, which was injected and thickened, and between the lamellæ of the compact tissue, which were easily separable from each other. At a more advanced stage, the blood had lost its dark colour, assumed a gelatinous consistence, become semi-transparent, was strongly adherent to the bony tissue, and had become vascular. The bony tissue was in this stage much softened, so that it could be bent and twisted.

In the second stage, characterized by deformity of the bones, and prominence of the apophyses and epiphyses, the swelling was found by M. Guérin to be dependent upon the development of an accidental spongy tissue, which has been called “spongoid tissue”—*tissu spongöide*, and is formed at the expense of the blood effused during the preceding stage. It is observed particularly where that fluid is extravasated, even between the lamellæ of the compact tissue, where it is distinguishable by the deeper colour of its tissue; but is especially abundant around the epiphyses, and in the cavity of the curvatures of bones, where its structure is, at the same time, much closer. When the disease terminates favourably, the spongoid tissue is transformed progressively into compact tissue; and soon acquires the hardness and appearance of ivory. This arrangement is especially observable at the concavity of the curvatures, where the tissue of new formation is so abundant, that it encroaches on the medullary canal, which is in this manner more or less narrowed. If, on the contrary, the disease continues its progress, the rachitic *reössification* is not effected; the compact tissue of the bone remains thin and fragile; the areolar tissue is formed of broad and irregular cells; is replaced by very thin osseous plates, and bathed in an oily liquid. This morbid change, which exists, likewise, in the epiphyses, is called by M. Guérin “rachitic consumption of the bones;” Fr. *Consumption rachitique des os*.

The internal lesions, found on the dissection of those who have suffered under rickets, are, as in scrophula, altogether incidental.

**Treatment.**—The same general mode of management, hygienical as well as therapeutical, must be pursued in rickets as in scrophula. A consideration of the etiology of the disease sufficiently shows the great importance of a properly regulated diet and regimen; without it, indeed, no good can be effected.

The various preparations of iodine, and especially the iodide of iron,

have been highly extolled, and are amongst our most valuable therapeutical agents. The mode of administering these and other agents is given under the head of SCROPHULOUS CACHEXIA. Every endeavour should be made to improve the tone of the nutritive organs, both by regimen and medicine.

Care should be taken in all cases not to exert any improper pressure on the bones, which are flexible and pliant, and may have their shape altered by pressure. "When recovery is taking place," says Dr. Maunsell, "and the child is sufficiently old, well-regulated gymnastic exercises will often produce very good effects in expanding the chest, and straightening the limbs and spine; but they should be used very cautiously, and always with due regard to the delicate health, and impaired strength of the patient. Dupuytren was in the habit of placing a child with deformed chest, with its back against a flat resisting body, and then pressing with the expanded palm of the hand upon the sternum, so as to flatten the thorax from before backwards, and increase the convexity of the ribs from side to side. By repeating this practice from day to day, it is possible to effect much improvement in the shape of the chest; but force sufficient to cause pain should never be employed. All instruments for straightening the limbs or supporting the spine are worse than useless, as they prevent the action and development of the muscles, which afford the only true means of restoring health and symmetry."

The author has succeeded, in many cases, in rectifying curvatures of the spine, consequent on the malacosis ossium of rickets, by directing the individual to place a weight—say of fifteen pounds, if the boy be ten or twelve years of age and active—in an inverted footstool or some similar contrivance, and directing him to walk two or three times a day, for fifteen minutes, backwards and forwards in the room with the hands raised and holding on to the stool. In this manner, the muscles have been strengthened under the stimulus to straighten the spine with the view of supporting the weight; and, in process of time, the curvature has been much diminished.

There are certain cases of defective development, which do not belong to rickets, inasmuch as there is no deformity of any organ; but the whole frame is formed on too small a scale, so that the individual does not attain the usual height. It is the opposite condition to that of the redundant development, which gives occasion to the formation of giants. How these modifications in the system of nutrition are produced, it is difficult to say. The impulse to the production of a living being of a definite size is laid in organization. Thus, we see a plant evolved from the seed—of the size proper to the species; and in the case of the oviparous animal, the egg of which is removed from all paternal or maternal influence, the size of the animal, when full grown, is equally determinate. Such is doubtless, also, the case in the higher classes of animals, the young of which remain within the mother for a certain period, subjected to but little influence from her. Although, however, the impulse seated in the germ is sufficient to account, in many cases, for the defective development of the future individual, circumstances of privation during the period of utero-gestation, and,

still more, during the earlier periods of childhood, may stunt the growth as they induce irregularities of development in rickets. In the case of rickets it has been believed, that the influence of the father is more frequent and apparent, and, perhaps, the same may be affirmed of the defective development in question. Until the period of puberty, and a few years afterwards, it is difficult to form an opinion as to the degree in which it is likely to exist; but when once observed, it is important to remove the youth, if possible, from all the circumstances in which he is placed, and to subject him to new impressions of every kind. With this view, travelling air and exercise, with the concomitant changes of scenery, society, and habits, should be recommended. This may be sufficient to impress new activity on the system of nutrition; but, in too many cases, no means will be of any avail, inasmuch as the defective development implicates the whole frame, and is almost always perhaps dependent upon original conformation, or rather upon an instinctive tendency derived from progenitors.

## 2. OSTEOMALACIA.

SYNON. Malacosteon, Malacostosis, Mollities ossium, Emollities ossium, Parostia flexilis, Softening of the Bones; *Fr.* Osteomalacie, Osteomalaxie, Ramollissement des Os; *Ger.* Erweichung der Knochen, Knochenerweichung.

Osteomalacia is softening of the bones occurring in the adult.

**Diagnosis.**—The disease almost always commences with pains in the course of the bones, and through the whole of the skeleton, which are often considered to be rheumatic. Sooner or later, however, swellings are observable, especially about the projections of the joints. Gradually, the progression of the patient becomes difficult and tottering, and, at length, cannot be effected at all; the bones evidently become crooked under the action of the muscles; the limbs are consequently shortened, and the whole stature is diminished to an incredible extent, and this at times in a few months. The skeleton of a female, preserved in the museum of the *Ecole de Medecine* of Paris, has scarcely a bone, which is not curved, disfigured, or shortened. The case is described by Morand, who affirms, that the left foot was so placed, that it could serve as a cushion to rest the head upon.

Notwithstanding the great deformity, the nutritive functions may seem to be accomplished with some regularity. The female—for the disease most frequently appears in that sex—may continue to menstruate; and some have become pregnant: death, however, supervenes sooner or later, from a general falling off of the functions, or owing to some lesion occurring mechanically or otherwise in some important organ. The teeth rarely participate in the affection, owing to their mode of nutrition; yet they have been softened and cartilaginous. Mastication is, therefore, practicable, unless the jaw-bones are implicated.

The pains in the bones rarely continue throughout the whole course of the disease. There have been cases, indeed, in which they have not existed at all, even when the parts were moved at any period. The urine is much the same as in rickets. It is very acid, and often contains an excessive amount of earthy phosphates.

Osteomalacia differs, however, from rickets, in several circumstances. It is a disease of adults; whilst rickets affects children. It goes on progressively increasing, whilst rickets becomes arrested in the progress of life. In rickets, too, there is little or no pain; and the bones never are as much softened as in osteomalacia. Moreover, the latter disease is, so far as we know, utterly incurable.

**Causes.**—Osteomalacia is much more frequent amongst females than males;—according to one observer—Gaspari—in the ratio of 10 to 3. Hence, a separate article is devoted to the consideration of the osteomalacia of the female—*Osteomalacia des Weibes*, in the *Encyclopäd. Wörterb. der Medicin. Wissenschaften*. It is essentially—as before remarked—a disease of the adult age; but in women is more seen about the critical time of life. It generally occurs in those who have been long subjected to privations, or diseases, which have enfeebled the constitution. Accouchement and its sequelæ, according to M. A. Bérard, have the most powerful influence in its causation.

**Pathological Characters.**—In place of the osseous tissue, a soft, reddish, spongy substance exists, from which a bloody fluid exudes on pressure. At times, in the whole length of the long bones only a small number of calcareous particles can be observed,—bony plates existing only at their extremities, which are often tumefied. A bone, thus morbidly changed, can be readily cut with the knife, and be bent in all directions. In a case, examined by the author, the os femoris could be twisted with the greatest facility. In the woman referred to, whose skeleton is in the *Ecole de Médecine*, of Paris, all the bones were softened; and the os femoris formed a soft, flexible, and almost membranous cylinder, which contained a thick and blackish bloody fluid. The greater part of the tibia and fibula was converted into a cartilaginous and membranous mass.

The periosteum of the affected bones is thickened, soft, and infiltrated with a pulpy and bloody matter; and the muscles are pale, infiltrated, and deformed, having relation to the degree of curvature in the bones to which they are attached.

Bones, in a state of *ramollissement*, have been analyzed by the chemists, who have always found, as might be expected, a great diminution in the calcareous substance. In the experiments of Messrs. Bostock and Meckel, the earthy part was not found to be more than one-fifth or one-eighth of the weight of the bones, whilst in health it is more than half. Dr. George Rees has more recently investigated the subject; and the following table is the result of his analyses:

	SOFTENED BONES.		HEALTHY BONES.	
	Earthy matter.	Animal matter.	Earthy matter.	Animal matter.
Fibula, - -	32.50	67.50	60.02	39.98
Rib, - - -	30.00	70.00	57.49	42.51
Vertebra, - -	26.13	73.87	57.42	42.58

Analyses have also been made by Prösch, Bogner, Ragsky, Lehmann, Von Bibra, and Marchand (*Simon*, by Day).

**Treatment.**—This is unfortunately of no avail. The indications would seem to be to improve in every possible manner the general

health, by the use of tonics, sea-air and bathing, and an appropriate diet; allaying the pains by opiates; placing the patient on a firm mattress, with the limb extended, and taking every precaution when it is necessary to move the whole body.

No article of the materia medica is of any great use against the diseased condition. The calcareous salts have been advised; but they are useless. The disease does not consist in a deficiency of those constituents of bone, but in a diseased condition of the system of nutrition. Pregnancy is to be avoided; but—should it take place—after parturition, the female should not suckle her infant.

#### VI. HYDROPIC CACHEXIA.

SYNON. Hydrops, Phlegmatia, Hyderos, Hyderodes affectus, Hydropisis; *Fr.* Hydropisie; *Ger.* Wassersucht, Wassergeschwulst.

It may be a question, whether dropsy ought to be classed amongst primary or idiopathic diseases. Perhaps in all cases, it should be looked upon as symptomatic; yet the functional phenomena that characterize it are so marked, and so different from those of other diseases, that it has been a custom, which may well be retained, to consider it under a distinct head; and the author has found it convenient to treat of it in this place, inasmuch as a diathesis, a *cachexia* or bad habit, is unquestionably induced under various exciting influences.

Dropsy has been a difficult subject to the professed nosologist; and it has been correctly observed by one of the most respectable of the class, Dr. Good, that “there is no genus of diseases, which has been more awkwardly handled by the earlier nosologists.” “The term *hydrops*”—says the writer just cited—“does not occur in Sauvages, Linnæus, or Sagar, and only once in Vogel in the compound—‘*hydrops scroti*.’ Linnæus connects *anasarca* and *ascites* with *tympanites*, *polysarcia*, and even *graviditas*, into one ordinal division, which he entitles *Tumidosi*, and of which these constitute distinct genera. Sagar arranges all the same under the ordinal division of *Cachexiæ*. Vogel pursues the same plan, with the omission of *graviditas*, which he does not choose to regard as a *cachexy*. Sauvages employs the term *hydropes*, but only in connexion with *partiales*, so as to restrain it to local dropsies; so that with him *ascites* is a *hydrops*, but *anasarca* is not a *hydrops*, and does not even belong to the same order; it is an *intumescencia*, under which, as in the arrangement of Linnæus, it is united with *polysarcia* and *graviditas*, while *hydrops thoracis* is an *anhelatio*, and occurs in another volume.” Perhaps, in no situation could this disease or rather genus of diseases be better introduced than here. Under other heads, particular dropsies have been investigated; but some observations are necessary on the genus, and particularly on that which has been termed *General Dropsy*.

As the term hypertrophy has been employed to signify supernutrition of the solid parts of the body, so *hypercrinia* has been used for an augmentation of the secretions, under which dropsy necessarily falls. The accumulations of serous fluid, which take place from the cellular and serous membranes, may not all, however, be owing to increased activity of the vessels, which deposit the fluid. In health, a

nice balance must be maintained between the quantity deposited, and that which is taken up by the appropriate vessels; and if, from any cause, the balance be destroyed, so that the secretory vessels are in a state of superexcitation, or the absorbent vessels in a state of diminished activity, whilst exhalation is to the healthy extent, accumulation of fluid may take place; and hence the different dropsies, instead of being all active, and, according to some, owing to an inflammatory action, may be either sthenic or asthenic, and the treatment in the two cases may have to be essentially different. Moreover, as will be shown under the head of General Dropsy, and as has been shown under the special dropsies of serous cavities, the accumulation of fluid may be dependent upon different modes of mechanical obstruction to the circulation, and to consequent transudation of the watery parts of the blood through the parietes of the vessels. Perhaps, the most general cause of dropsy is impediment to the free circulation of the blood in some solid viscus; yet this, of itself, is probably insufficient to account for the phenomena of dropsy, inasmuch as temporary obstructions to the circulation may certainly arise without any evidence of the hydroptic diathesis. That such hydroptic or leucophlegmatic state may be induced, requires a special condition of the vessels concerned in the deposition and absorption of the fluids, which, in a state of health, lubricate the cellular and serous membranes; but of the precise pathological alteration we have no accurate knowledge. The blood itself is likewise modified in its characters, and the action of the whole system of nutrition impaired, so as to give rise to the laxity of fibre and paleness of surface, which characterize all hydroptic affections, and especially those of the general cellular membrane.

The characteristics of the hydroptic diathesis are few in number, but they are very unequivocal. They consist of—diminished secretion of urine, thirst, œdema of the feet and ankles, and a peculiar expression of countenance, to which the term *leucophlegmatic* has been applied.

### 1. *General Dropsy.*

SYNON. Anasarca, Hydrops cellularis totius corporis, H. cellulosis seu intereus seu subcutaneus, Hyposarcidiosis, Hydroderma, Leucophlegmatia, Aqua inter cutem, Hydrops cutaneus; Fr. Anasarque, Hydropisie générale; Ger. Hautwassersucht.

By anasarca or general dropsy is understood the infiltration of a serous fluid into the cellular membrane, characterized by general tumefaction of the body, paleness, softness, coldness, and loss of elasticity of the tegumentary covering. When the disease is partial, it is termed *œdema*.

Anasarca has been divided into the *idiopathic* and the *symptomatic*; but the more we become acquainted with the pathological relations of different portions of the economy, the smaller we find the number of idiopathic dropsies. In the generality of cases, we can sufficiently appreciate the primary lesion that gives occasion to the loss of balance between the exhalents and the absorbents; but in other cases, we are compelled to infer, that a morbid condition of those vessels exists, which we are unable to ascribe to any manifest cause.



**Diagnosis.**—There are certain functional phenomena, which are common to every form of dropsy; and, first of all, swelling of the body—generally of the lower extremities, in the first instance—which commences around the ankles, and gradually extends upwards, until it ultimately gains the whole body. The accumulation in the lower limbs is more apparent in the evening, when the individual has been up during the day, and it may be scarcely apparent on first rising in the morning. The cause of the greater swelling of the ankles in the evening is the gravitation of the fluid from the upper parts of the extremities and the body, and the ready communication that exists between the various parts of the cellular membrane. At times, the tumefaction is first observed on the face or upper limbs; and, at others, it affects the whole of the cellular membrane almost simultaneously. The swelling is greatest where the cellular membrane is most lax,—as around the ankles, the scrotum, loins, and in the eyelids; and, in proportion as it augments, the skin becomes smooth and tense; its rugæ are effaced, its elasticity diminishes, and when the parts are pressed upon by the thumb or fingers, the depression remains for a long time. Under the pressure, the fluid is forced into the neighbouring parts of the cellular membrane, and it is not until the cells, from which it has been pressed, have become refilled, that the depressions disappear.

Whilst the infiltration takes place into parts of the cellular membrane which admit of distension, those parts of the body, that are not infiltrated in any quantity, exhibit defective nutrition:—thus, the cheek bones become prominent; the ribs marked under the skin, and the fingers attenuated. Occasionally, the distension occurs so rapidly as to induce considerable pain, and when the fluid has accumulated to a great extent, the epidermis cracks, so as to leave whitish cicatrices after the cure, similar to those that are observed on the abdomen of a female after delivery. At times, too, the fluid transudes through the skin in minute drops; and, at others, it accumulates under the epidermis in the form of vesicles, from which it may be absorbed; or the vesicles may be ruptured, and a copious oozing may take place from the denuded surface, which, in rare cases, has been the means of removing the infiltrated fluid, and a cure has been effected. The skin is generally of a pale hue; but, at others, it is red or livid: commonly, it is streaked by the veins distributed over it. Its temperature is usually below the natural standard; but, occasionally, from causes within or without the economy, some part of the cutaneous surface is attacked with inflammation, which has a strong tendency to terminate in gangrene. The parts, too, that are subject to pressure, where the infiltration is to a great extent, are liable to slough; and large gangrenous eschars are thrown off, which are the source of much inconvenience, and are often the cause of a more rapidly fatal termination.

The character of the pulse, like the temperature of the skin, varies according to the condition of the system connected with the dropsy. If there be much activity, the pulse may possess the ordinary characters of that of the phlegmasiæ. If, on the other hand, the disease present itself in a person of feeble constitution and impoverished blood,

the pulse may be feeble: the digestive functions may be unimpaired, or they may suffer more or less; and, not unfrequently, under the constant irritation, diarrhœa supervenes, which may be favourable or unfavourable, according to its degree, and to the character of the dropsy as to sthenia or asthenia. Frequently, too, the dropsical affection implicates, more or less, other mucous membranes, and gives occasion—for example—to BRONCHORRHEA.

The urinary secretion is almost always diminished in quantity, and, at times, is nearly suppressed. Its qualities vary materially; but generally, it contains the same elements as in health, yet in different proportions. At times, however, it is dark, rich in uric acid, and, according to M. Schönlein in urea also; at others, a large quantity of albumen is found in it, and, along with this, a diminution in the quantity of urea. These appearances generally coincide with a granular condition of the kidney, the characters of which have been described elsewhere. It is, consequently, of importance to test the urine in all cases, with the view of noticing especially, whether it contain albumen.

Anasarca, when it has made considerable progress, generally affects, more or less, the respiratory apparatus, and gives occasion to difficulty of breathing. Commonly, in its advanced stages, there is effusion into the different splanchnic cavities, which causes dyspnœa; but the same result may be induced by the infiltration of the sub-mucous cellular tissue of the bronchial tubes; and of the cellular texture that goes to the formation of the lungs. The like pathological condition gives occasion to more or less cough in the generality of cases, which is sometimes dry, at others moist.

The disease is, of course, more or less dangerous, according to the causes that engender it. The active form, which occurs in persons previously in good or tolerable health, and of fair constitutions, generally terminates in health, whilst that which occurs in persons of broken-down constitutions, and is merely an evidence of some serious visceral mischief, or aberration in the system of nutrition, is of extremely unfavourable prognosis. The dropsy, that is dependent upon granular disease of the kidney is, likewise, unfavourable, but it is, unquestionably, often cured. The author has several times succeeded in removing this form of dropsy in very unpromising cases; but it is liable to recur. When it supervenes in the course of long-protracted diseases, the prognosis merges in that of the disease of which it is symptomatic. Simple œdema of the lower extremities is a very common accompaniment of the last stages of serious chronic lesions, but it rarely demands special management.

**Causes.**—It has been already remarked, that in all cases of dropsical accumulation, there must be a loss of balance between the vessels, whose office it is to deposit the serous fluid, and those whose office it is to take it up. Into the causes that give occasion to this loss of balance, it is now proper to inquire. One of these would seem to be an excited, if not an inflammatory condition of the serous or cellular membrane, giving rise to what has been termed *active* or *sthenic dropsy*; the fluid accumulating—in the case of anasarca—in the cel-

lular membrane, under a process similar to that which is established when a blister has been applied to the skin, or when fluid is effused into a part affected with phlegmonous or erysipelatous inflammation. This form of dropsy usually occurs in strong active individuals, and under circumstances that give rise to a sthenic condition of the system;—as about the period of the first establishment of the catamenia, if this be effected with difficulty; or on the suppression of some periodical evacuation or source of excitement. It is often, also, witnessed at the period of desquamation of scarlatina, and, occasionally, at the termination of measles.

The most common cause of dropsical infiltration unquestionably is, —an impediment to the circulation of the blood, either in the great central organ, or in some portion of the venous system. Very frequently, this impediment to the circulation in the heart would seem to consist in a morbid condition of the valves, which, owing, often, to dilatation of the cavities of the heart, become insufficient to close the openings, and, consequently, seriously disturb the circulation of the blood through the organ. This insufficiency, as a cause of dropsy, would appear to exist most commonly in the tricuspid valve.

When visceral disease exists to any great amount, the system of nutrition always becomes morbidly affected, a hydroptic diathesis is induced, and transudation is readily accomplished through the walls of the particular vessels that are most engorged. We have an excellent example of this in the case of ascites induced by induration of the liver, to which allusion has been made under the proper head. In consequence of such induration, the blood of the vena portæ cannot circulate freely through the liver; the branches of the vessels are engorged; and the nutrition of the parietes having become impaired by the general derangement of the system, they readily permit the transudation of the watery portions of the blood. In this case, dropsy of the lower belly is the consequence; but it can be easily understood, that similar diseases of other solid viscera, or impediments to the circulation, may lay the foundation for hydroptic accumulations there or elsewhere. Chronic disease of the heart is a very common cause; and it need scarcely be said, that the dropsy, thus induced, does not readily admit of cure, inasmuch as the primary affection may be palliated, but cannot, in general, be removed radically.

Of partial dropsies, resulting from temporary obstructions of the circulation, we have a familiar example in intermittents, in almost all cases of which there is more or less enlargement of the spleen, and concomitant infiltration of the cellular membrane; but both affections pass away after the intermittent has been arrested.

Another cause of anasarca, and of dropsy of the cavities, is the disease of the kidney, described, of late years, as the disease of Bright. In all the older and modern works on the practice of physic, suppression of urine, or a sudden diminution in the quantity of the secretion, has been esteemed a cause of anasarca, but the researches of modern observers have sufficiently shown, that a pathological condition of the kidney, in which the cortical portion assumes a granular character, and secretes albumen from the blood, is by no means an uncommon

cause. The characters of this renal affection are carefully described elsewhere.

A sudden suppression of the transpiration has been presumed to exert considerable agency in the production of anasarca, but it is questionable, whether the exact relationship of cause and effect be here understood. The perspiration is certainly very generally diminished in hydropic affections; but this may be owing to the more copious exhalation of serous fluid into the cavities or cellular membrane, and the supposed effect may consequently be the cause. Under either view, the propriety of producing proper diaphoresis would be equally important. Certain it is, that obstruction of the perspiration is not alone sufficient to induce the disease, otherwise we should meet with it far more frequently; and even in those, who possess the hydropic diathesis, it may, we think, be questioned, whether it ought to be classed amongst the exciting causes.

Occasionally, the loss of balance between the action of the exhalents and absorbents is produced very suddenly. It was a common remark with the author, in his attendance on an extensive eleemosynary institution, that several dropsical cases were generally admitted after the debauches of the 4th of July; and these generally yielded to treatment.

Dr. Chapman states, that he attended a gentleman, in consultation with Dr. Physick, who laboured under general dropsy, which he traced to having plunged into a cold-bath, whilst sweating from severe exercise. The effusion took place within a very few hours after coming out of the bath. His previous health had been perfect. He refers, also, to another case, caused by going into a bath, the water of which was so hot that the gentleman could scarcely bear it. On leaving the bath he found his skin very florid, even scalded, and soon experienced the distension of ascites, to which succeeded anasarca, and afterwards hydrothorax.

Amongst the causes has been reckoned a modified condition of the blood; but the precise character of such modification has not been defined. Plethora may, doubtless, have an influence. Amongst the physical causes of exhalation, adduced by M. Magendie, is the pressure experienced by the blood in the circulatory system, which is conceived by him to contribute powerfully to cause the more aqueous part to pass through the coats of the vessels. If water be forcibly injected, by means of a syringe, into an artery, all the surfaces, to which the vessel is distributed, as well as the larger branches and the trunk itself, exhibit the injected fluid oozing in greater abundance, according to the force exerted in the injection. He farther remarks, that if water be injected into the veins of an animal, in sufficient quantity to double or treble the natural amount of blood, a considerable distension of the circulatory organs is produced, and consequently, the pressure experienced by the circulating fluid is largely augmented. If any serous membrane be now examined,—as the peritoneum,—a serous fluid is observed issuing rapidly from its surface, which accumulates in the cavity, and produces a true dropsy under the eyes of the experimenter. On the other hand, if a coloured solution be thrown into the cavity of the peritoneum in a living animal,

and blood be then drawn,—as the blood flows from the vein, the coloured solution will be observed to pass from the peritoneum and mix with the fluid of the circulation. These are interesting physiological experiments, and especially so in relation to the pathology and therapeutics of dropsy.

An anæmic condition is, also, unquestionably favourable to the generation of dropsical effusions; hence, we observe them, after repeated hemorrhages, which have drained the blood of its more solid portions, in long-protracted abstinence, scorbutic and chlorotic cachexia, &c. When the blood is defibrinised from any cause—as under the experiments of the physiologists, or by certain morbid poisons received into it—foundation is likewise laid for infiltrations into the cellular membrane.

From all this it is obvious that the condition of the blood must vary greatly in anasarca. When drawn from a vein, the coagulum usually swims in the midst of an unwonted quantity of serum. It is not often covered by an inflammatory crust, unless occasionally in the dropsy that is associated with granular disease of the kidney.

**Pathological Characters.**—On the examination of the subcutaneous cellular tissue of one who has died of anasarca, it is found distended by a limpid serous fluid, usually of a bright orange-yellow hue. At times, however, when the infiltration has been accompanied by inflammatory action, the cellular membrane has been found red, injected, and presenting, here and there, points of induration. In the most common cases of asthenic anasarca, the fluid is found bathing the cellular tissue and the subjacent muscles, which are rendered unusually pale and flaccid, and tear with the greatest ease; and the vessels that traverse the cellular membrane are less filled than usual. Sometimes, the infiltration is restricted to the subcutaneous cellular tissue; but, at others, it extends to that which envelopes the fasciculi and the fibres of muscles, the tendons, vessels and nerves, and occasionally to that which enters into the constitution of the viscera. Wherever the infiltration exists, the cellular tissue appears to be much softened; and, at times, according to M. Nonat, assumes a subgelatinous appearance. In a form of œdema, however, elsewhere described—the œdema of the new-born—it appears to acquire a greater density.

Chemical analysis has shown that the ordinary fluid of anasarca is composed chiefly of water, albumen, muco-extractive matter, chloride of sodium, chloride of potassium, sulphate of soda, phosphate of soda, iron and magnesia. Occasionally, in the dropsy that is dependent upon granular disease of the kidney, it exhibits traces of urea.

**Treatment.**—The consideration of the causes of anasarca sufficiently indicates, that great diversity must exist in its treatment under different circumstances. These causes must be clearly appreciated; the main indication, in all cases, will be to obviate them; and the next to remove the fluid already collected in the cellular membrane.

It too often, unfortunately, happens, that the pathological causes of anasarca,—in other words, the primary disease on which it may be dependent,—are beyond the power of medicine. The affections of the heart; the indurated liver, the granular kidney, and the generally

broken-down constitution of hydropics are conditions, which of themselves are of fatal character, and the anasarca is but a symptom. It need scarcely be said, that the efforts of the practitioner must be directed to the removal of these primary diseases, unsuccessful as those efforts will too often prove. Not unfrequently, however, the precise pathological condition that gives occasion to the infiltration is inappreciable. In such case, the practitioner is compelled to be guided by the general symptoms that have been pointed out, and to endeavour to discover, whether the disease be accompanied by symptoms of vascular activity, or the contrary. Should the former be the case, a treatment, adapted for sthenic diseases, may be necessary; and bloodletting may have to be practised, and even repeated more than once. Bleeding not only reduces the over-excitement, but, as already remarked, is one of the most powerful promoters of absorption we possess. Accordingly, the dropsy occasionally yields, as if by enchantment, to bloodletting. On the other hand, if the infiltration occur in a person whose circulation is carried on feebly, bloodletting may be decidedly improper, and can, indeed, have no other effect than that of augmenting the evil. If the blood possess the morbid tenuity, which it does in the various forms of anæmia and cachexia, described above, a system of management, recommended under those heads, becomes indispensable. Unless the spissitude of the blood be augmented, and the nutrition of the parietes of the vessels improved, the fluid will continue to transude.

When a proper attention to the condition of the different organs of the economy, and to the circulating fluid fails to remove the symptomatic infiltration, the next indication arises, which is to promote the absorption of fluid, and its discharge, by the different emunctories.

Of bloodletting, mention has already been made. As a powerful sorbefacient, it is adapted to particular cases of anasarca, but not to all; and it must always be employed with a wise caution. Emetics were, at one time, highly recommended, and the concentration of vital action, which they induce in the stomach, has occasionally had a good effect; but they are rarely employed at the present day, in consequence of their having no properties, not equally possessed by cathartics, and still more by diuretics.

The cathartics, usually prescribed, where there is no serious visceral disease, are those termed "hydragogue," or which excite copious watery evacuations;—thus, not only producing a revellent action upon the bowels, but diminishing the amount of the fluid of the circulation. Those that are given with this view, are jalap and bitartrate of potassa alone, or in combination, as in the form of the *pulvis jalapæ compositus*, (gr. xxx.—ʒij.) gamboge, scammony and elaterium, alone, or associated together, or with other articles.

<sup>a</sup> R.—Potass. bitart. ʒij.

Jalap. pulv. ʒj.

Gambog. pulv. gr. vj.—M. et divide in part vj.

One of these to be given three or four times a day, until they act strongly on the bowels.

Some practitioners, in these and similar cases, are in favour of combining several analogous remedies in small quantities, rather than of

giving a single one in a large dose. The author has not been able to discover the advantage of this course, although he has instituted several comparative trials with the view of testing it. It is upon this principle, however, that Dr. Graves has advised the following combination of cathartics.

R.—Jalap. pulv.  
Rhei,  
Scammon, āā gr. v.  
Elaterii gr. ss.  
Potass. bitart.  
Potass. sulphat. āā ℥ss.  
Syrupi zingiber. q. s. ut fiat bolus.

Elaterium acts very energetically on the intestines, and gives occasion to a copious discharge of watery secretion from the lining membrane; but it is harsh, and hazardous in its operation; and neither it nor any of the drastics is proper where an inflammatory condition of the mucous membrane of the stomach or intestines is coexistent.

Croton oil has been recommended by Dr. Geo. Fife as possessing the very decided advantage over elaterium,—that even when its extreme action is manifested, “it is not followed by the depression inseparable from the effective action of the latter; but that where the greatest vis inertiae has prevailed, accompanied by absolute incapacity for exertion, a sensible amelioration in these respects has followed its continued employment.”

The revellents, most frequently employed in dropsy, are such as act on the kidney, and increase the urinary secretion; combined, or not, with cathartics as already recommended. Yet diuretics, of the stimulating kind especially, are not adapted for all cases, and especially for such as are dependent upon granular disease of the kidney. In ordinary cases, where no visceral disease contraindicates their use, we have recourse to the infusion of juniper berries, alone, or associated with the bitartrate of potassa.

R.—Baccar. junip. ℥j.  
Aquæ fervent. Oij.  
Potassæ bitartrat. ℥ij.

To be used for common drink, whenever the patient is thirsty.

A solution of the bitartrate of potassa, made into a kind of lemonade, is also given for common drink.

R.—Potass. bitartrat. ℥ij.  
Limon. cort. recent. ℥j.  
Sacchar. ℥j.  
Aquæ bullient. Oj.

Squill is likewise given, either alone,<sup>a</sup> or united with digitalis,<sup>b</sup> or calomel.<sup>c</sup>

<sup>a</sup> R.—Scillæ pulv. gr. j.  
Glycyrrhiz. pulv. gr. ij.—M. et fiat  
pil. ter die sumenda.

<sup>b</sup> R.—Scillæ pulv.  
Digital. — āā, gr. j. fiat pil. ter  
die sumenda.

<sup>c</sup> R.—Scillæ pulv. gr. j.  
Hydrargyr. chlorid. mit. gr. ss.  
Glycyrrhiz. pulv. gr. ii.—M. et fiat pilula.

The last combination may be continued until it affects the mouth slightly, or, in other words, exerts its revellent action on the system,

which is often most salutary. The joint revellent action of the squill on the kidney, and of the mercury on the secernent system in general, gives occasion to the absorption of the effused fluid, whilst the augmented renal secretion, induced by the former, evacuates it, and likewise stimulates the whole of the absorbent system to greater activity. Not unfrequently, digitalis is given in the form of infusion or tincture, or both.

R.—Infus. digital. fʒiv.  
Tinct. digital. fʒj.—M.

Dose, a teaspoonful, three or four times a day.

Care must be taken, however, in all cases, not to push it too far, but to arrest its employment when it begins to affect the circulation or the stomach. It has been properly remarked by Dr. Geo. Gregory, that there is no plan of treatment adapted for such a variety of cases, as the union of digitalis or squills with mercury, and such has been the result of the observation of the author.

Colchicum was highly recommended as a diuretic by Dr. Störck, and it has been given in more recent times. In such cases, it may be well to push the remedy until it affects the stomach or bowels.

R.—Vin. colchic. fʒj.  
Sp. æth. nitric. fʒij.  
Mucilag.  
Syrup. aa, fʒij.  
Aquæ fʒijss.—M.

Dose, one-third part, three times a day.

Many other diuretics—as the acetate and the nitrate of potassa—have also been administered, but they are generally inferior to those already mentioned. The more stimulating—as oleum terebinthinæ, copaiba, and cantharides—can rarely be needed, and are always to be administered with exceeding caution. Mr. Kingdon found anasarca swellings of some standing disappear under the use of nitrate of urea, which acted as a powerful diuretic. In one case, he gave a grain of the nitrate with one of calomel, in the form of pill, every night and morning, for twelve days. The urine became copious, and the swelling disappeared. In another, a grain and a half of the nitrate was given alone three times a day. In ten days the anasarca had disappeared.

They, who have considered that general dropsy is induced by obstructed perspiration, have endeavoured to restore it by various diaphoretics—as *pulvis ipecacuanhæ compositus*—but they are rarely of much advantage. It has been already remarked, that obstruction of the perspiration is seldom or never the cause of dropsy, and, therefore, remedies that are blindly addressed to its restoration cannot be expected to prove of much benefit. Dover's powder may afford relief, however, by its hypnotic properties.

Much difference of sentiment has existed in regard to the quantity of drink that should be permitted to hydropic patients. Whilst some restrict it altogether; others allow as much as they are capable of taking. Perhaps the best rule is the desire of the patient, indulged in moderation. In the generality of cases of anasarca, the disease consists less in too great a quantity of aqueous fluid in the vessels, than



in loss of balance between the exhalents and absorbents; yet still, as already remarked, repletion of vessels is unfavourable to ready absorption; and, therefore, drink should only be allowed with the view of alleviating thirst.

Owing to its powerful agency in modifying nutrition, iodine has been prescribed by many practitioners. Several cases, it is affirmed, have been removed by a mixture of the ioduretted iodide of potassium,<sup>a</sup> aided by an ointment of iodine,<sup>b</sup> placed inside the thighs, the cuticle having been removed by a blister.

<sup>a</sup> R.—Iodin. gr. iij.  
Potass. iodid. gr. vj.  
Aquæ fʒj.—M.

<sup>b</sup> R.—Iodin. gr. xv.  
Potass. iodid. ʒss.  
Adipis fʒj.—M.

Dose, six to fifteen drops, three times a day.

The arm-pits and soles have, also, been rubbed with the ointment.

In regard to the local means to be employed in anasarca, with the view of promoting the absorption of the infiltrated fluid, much need not be said. Few, indeed, are of any efficacy. Methodical compression, by means of a bandage or laced stocking, has appeared, at times, to be of service; but, usually, it is merely necessary as a support, when the integuments are largely distended by the fluid. In the generality of cases, the benefits from the bandage are more apparent than real,—the water being simply forced from the cellular membrane pressed upon into other positions, and returning to its former situation when the pressure is withdrawn. Frequently, in these cases of large distension, the integument becomes inflamed, and is apt to slough. Washes of subacetate of lead, diluted, or of weak creasote water, or the application, by means of a camel's hair pencil, of tincture of iodine, are often prescribed, along with the gentle support of the bandage; but warm applications—as a poultice—have proved more serviceable in the author's experience. The vitality of the integument is interfered with by the fluid effused beneath it, and gentle warmth tends to enable it to free itself from the asthenic hyperæmia. The spontaneous giving way of the integument must always be prevented, if practicable, as it is almost invariably followed by sloughing.

When the infiltration is considerable, and there is apprehension that spontaneous rupture of the integument may occur, it may become advisable to evacuate the fluid. For this purpose, various plans have been recommended. Punctures—made with the point, or scarifications with the shoulder of a lancet—have been used, and, at times, with advantage. They are occasionally, however, followed by gangrenous inflammation of the skin and subjacent parts; and the same remark applies to the employment of blisters and issues. At an advanced period of the disease, when the vitality of the parts has been reduced by the protracted pressure of the fluid, these agents should be employed with great caution; and in almost all cases it will be advisable that the punctures should not be too numerous or too close together. As the fluid is discharged, a gentle pressure should be made upon the distended integument. The operation of acupuncture has been used advantageously to drain off the fluid. In such case, larger needles than those in common use are needed. Some

prefer them of the size of an ordinary glover's needle, and of a triangular shape—a puncture of this kind being less likely to close.

It is obvious, from all that has been said, that the treatment of anasarca, as well as of dropsy in general, must repose essentially upon an attention to the causes that have given rise to it; and unless these are obviated, it matters not that we remove the fluid already secreted; it will be constantly reproduced. No fixed plan of treatment can be laid down. The functional phenomena, as well as the organic mischief, where it exists, must be accurately appreciated, and treated accordingly. The mode of management—as already seen—which is applicable to sthenic dropsy, cannot be advisable in the asthenic, and the particular visceral disease must demand a medication adapted to it. In like manner, the dropsical effusions, which supervene on particular diseases, present characters that are not readily mistaken. Those that follow intermittent fever, require a continuance of the same plan as indicated in the intermittent itself; and such as succeed to exanthematous affections need more activity, as all the phenomena exhibit that they belong to the sthenic form of dropsy. (See SCARLET FEVER.)

The diet, throughout the affection, must be regulated—according as the dropsy is sthenic or asthenic—on principles that have been so often pointed out as to render repetition unnecessary. It may be proper, however, to add, that the advantages of a milk diet have been strongly insisted on of late by M. Vailhé.

## VII. CANCEROUS CACHEXIA.

SYNON. *Cachexia cancerosa*, Cancer, Carcinoma; *Fr.* Cachexie cancéreuse; *Ger.* Krebs.

Although it has been maintained by some, that cancer, in its various forms, may be a mere local degeneration, it can scarcely be doubted, at the present day, that such degeneration is connected with a special condition of the system or cachexia. Accordingly, this has been made to enter as a part of the definition of the disease by pathologists. One of the most recent and able of these, Dr. W. H. Walshe, properly defines cancer to be “a disease anatomically characterized by the presence of scirrhous, encephaloid or colloid, originating in a general vitiation of the economy, and possessing the properties of assimilation, of reproduction, and of destroying life by a peculiar cachexia.”

The subject of cancer falls so generally under the consideration of the surgeon, that it will not be necessary to dwell upon it here. Inasmuch, however, as the cancerous affections of internal organs fall in the domain of internal pathology, and are, accordingly, considered in various parts of this work, a few general observations on this cachexia may be necessary.

A writer of distinction, both on physiology and pathology, J. Müller, from his anatomical researches is disposed to consider, that no division of pathological structures into homologous and heterologous can be established; and he maintains, that the elementary structures of all morbid growths, hitherto examined, resemble, in every respect, the structures presented in the several stages of development of the elements of the healthy tissues of the body; and as the element in the

healthy tissues is a nucleated cell, so also cells growing upon nuclei, and developing new cells within themselves, or elongated into caudate or spindle-shaped bodies, or in a still higher stage of development forming fibres, are conceived to form the main structure of all morbid growths. Blood-vessels are later formations, as they are known to be in the materials that constitute the embryo. It appears clear, however, that even if we admit the nucleated cell to be the same in the healthy and in the heterologous tissue, there must be an impulse seated in the one, which is not present in the other, and which leads to a different development; and, consequently, it is proper for us to regard cancer as a heteroclite or heterologous formation, and it is so considered by Dr. Walshe, whose classification of the genus cancer or carcinoma, and description of the characters of its species are adopted here, as according in all respects with the views of the author.

*Genus Cancer or Carcinoma.*

<i>Species.</i>	<i>Varieties.</i>	<i>Synonyms of the Species.</i>
Encephaloid	Common vascular sarcoma. } Mammary sarcoma? } Solanoid. RECAMIER. ZANG. } Nephroid. <i>Idem.</i> } Napiform. <i>Idem.</i> } Carcinoma fasciculatum vel hyalinum. } MUELLER. } Fungus hæmatodes. HEY. } Hæmatode cancer. AUCT. GALL. }	Spongy or ossivorous tumour. RUTSCH-PALLETTA. Struma fungosa (testis). CALLISEN. Spongoid inflammation. BURNS. Milt-like tumour. MUNRO. Medullary sarcoma. ABERNETHY. Cerebriform disease or cancer. LAENNEC. Pulpy testicle. BAILLE. Carcinus spongiosus. GOOD. Carcinoma spongiosum. YOUNG. Fungoid disease. A. COOPER. HODGKIN. Medullary fungus. MAUNOIR. CHELIUS. Acute fungous tumour. C. BELL. Medullary cancer. TRAVERS. Cephaloma. HOOPER. CARSWELL. Carcinoma medullare. MUELLER. Soft cancer. AUCT. VAR.
Scirrhus	Pancreatic sarcoma? ABERNETHY. Napiform. } Chondroid. } Lardaceous tissue. AUCT. GALL. Carcinoma reticulare. MUELLER.	Areolar gelatiniform cancer. CRUVEILHIER. Carcinoma alveolare. MUELLER. Gum cancer. HODGKIN.
Colloid	Pultaceous cancer. } Pearly alveolar ditto. } CRUVEILHIER.	Areolar gelatiniform cancer. CRUVEILHIER. Carcinoma alveolare. MUELLER. Gum cancer. HODGKIN.

These three species of carcinoma are thus described in a tabular manner by Dr. Walshe:

<i>Encephaloid.</i>	<i>Scirrhus.</i>	<i>Colloid.</i>
Resembles lobulated cerebral matter.	Resembles rind of bacon traversed by celluloso-fibrous septa.	Has the appearance of particles of jelly inlaid in a regular alveolar bed.
Is commonly opaque from its earliest formation.	Has a semitransparent glossiness.	The contained matter is strikingly transparent.
Is of dead white colour.	Has a clear whitish or bluish yellow tint.	Greenish yellow is its predominant hue.
Contains a multitude of minute vessels.	Is comparatively ill-supplied with vessels.	(Its vessels have not been sufficiently examined as yet.)
Is less hard and dense than scirrhus.	Is exceedingly firm and dense.	The jelly-like matter is exceedingly soft; a colloid mass is, however, firm and resisting.
Is frequently found in the veins issuing from the diseased mass.	Has not been distinctly detected in this situation.	The pultaceous variety has been detected in the veins.
The predominant microscopical elements are globular, not always distinctly cellular, and caudate corpuscula.	The main microscopical constituents are juxtaposed nuclear cells; caudate corpuscula do not exist in it.	Is composed of cells in a state of <i>emboîtement</i> .

*Encephaloid.*

Occasionally attains an enormous bulk.

Has been observed in almost every tissue of the body.

Very commonly coexists in several parts or organs of the same subject.

Is remarkable for its occasional vast rapidity of growth.

Is frequently the seat of interstitial hemorrhage and deposition of black or bistre-coloured matter.

When softened into a pulp, appears as a dead-white or pink-opaque matter of creamy consistence.

Subcutaneous tumours are slow to contract adhesion with the skin.

Ulcerated encephaloid is frequently the seat of hemorrhage, followed by rapid fungous development.

The progress of the disease after ulceration is commonly very rapid.

Is the most common form under which secondary cancer exhibits itself.

Is the species of cancer most frequently observed in young subjects.

*Scirrhus.*

Rarely acquires larger dimensions than an orange.

Its seat, as ascertained by observation, is somewhat more limited.

Is not unusually solitary.

Ordinarily grows slowly.

Is comparatively rarely the seat of these changes.

Resembles, when softened, a yellowish-brown semitransparent gelatinous matter.

Scirrhus thus situate usually becomes adherent.

Scirrhus ulcers much less frequently give rise to hemorrhage, and fungous growths (provided they retain the scirrhus character) are now more slowly and less abundantly developed.

There is not such a remarkable change in the rate of progress of the disease after ulceration has set in.

Is much less common before puberty.

*Colloid.*

Observes a mean in this respect.

Has so far been seen in a limited number of parts only.

Has rarely been met with in more than one organ.

Grows with a medium degree of rapidity.

Undergoes no visible change of the kind.

Has so far been observed in adults only.

As in the case of tuberculosis, an examination of the blood has confirmed the position, that the disease is a perversion of nutrition in no case analogous to inflammation. M. Andral found, that so long as tubercle or cancer is in the form of hard masses without any sign of phlegmasia around them, the blood constantly presents, on analysis, its normal quantity of fibrin; but in proportion as these hard masses soften, and a process of elimination, similar in its characters to the inflammatory, is established around them, the blood becomes more and more charged with fibrin, so that the formation in excess of this element does not depend upon the development of the accidental product, but upon the inflammation, associated with it at a certain period of its existence. This is another proof—as M. Andral properly remarks—to be added to many others, which demonstrate, that the process which creates different accidental products,—as tubercle, cancer, melanosis, hydatids, &c., is not of the same nature as that which constitutes inflammation.

The chemical and histological relations of cancer, as depicted by recent observers, are given at length in the valuable works of Simon, (translated by Day, Sydenham edition, London, 1845-6,) Vogel, (translated by Day, London, 1847,) and Walshe, (London, 1847.)

Of the organic and functional phenomena presented by cancer, when it affects the internal organs, a full description has been given under the proper heads. This renders it unnecessary to dwell upon them in this place. The appropriate remedies to be adopted have, likewise, been enumerated. Unfortunately, it is too probable, that when carcinoma has invaded an internal organ, it is never cured. It is affirmed, indeed, that it has never been removed by medicinal agents alone. The

only class of remedies, that can be expected to afford any essential benefit, are those that are capable of inducing a new condition in the system, by modifying the function of nutrition,—such as the various preparations of iodine, combined with a thorough change of everything surrounding the individual. The cachexia is the real morbid condition, and the cancerous affections in particular organs are but so many evidences of it,—as tubercles in the lungs are mere expressions or indications of another form of cachexia, equally possessing the whole system. Hence it is, that cancerous tumours on the external parts of the body are so apt to recur after they have been removed by the surgeon. Still, it must be admitted, that in cases of scirrhus tumours, when they have been removed early, there has very frequently been no return of the disease. The particular species of cancer influences, however, the probability of recovery. It would seem, that there are few examples of permanent recovery after the removal of encephaloid tumours. Of course, the earlier the mass is removed, the greater are the chances of entire recovery, for the continuance of the local lesion cannot fail to react on the general system, and to further the greater development of the cachexy.

Statistical inquiries by M. Leroy d'Etiolles, in France, offer no great encouragement to the surgeon to remove these lesions, where practicable, by the knife. Of 2781 cases, occurring in the practice of 174 surgeons, 1227 happened in persons above 60 years of age. The cases of cancer of the uterus were about 30 per cent.; those of the breast, 24 per cent. Cancer of the mouth was in women only as 1 to 1½ per cent.; whilst in men—probably, he suggests, from the use of the tobacco-pipe—it was as much as 26 per cent. Of 1172 patients, not operated on, 18 lived for more than thirty years after the first appearance of the disease; whilst of 801 operated on by excision or caustic, the existence of only 4 was prolonged for a similar time. 14 patients, operated on, and 34 not operated on, lived from twenty to thirty years; and 88 in the first category, and 228 in the second, lived from six to twenty years after the first appearance of the disease. The ordinary duration of life after this period, amongst persons not operated on, is said to be five years for men, and five and a half for women; whilst among those operated on, it is no more than five years and two months for men, and six years for women. Hence it would seem, that setting aside the immediate danger from the operation, the removal of cancerous disease by the knife had but little influence in prolonging life. Farther observations are needed, however, before these inferences can be regarded as generally applicable.

Dr. Klencke—it is said—has succeeded in communicating carcinoma to healthy animals, by inoculating them with cells obtained from one suffering under the disease.

It has been stated, that tubercle and cancer naturally exclude each other. M. Lebert, however, has not only met with cases where the two diseases existed together, but has convinced himself that one in no way arrests the march of the other.

## VIII. SYPHILITIC CACHEXIA.

SYNON. Cachexia venerea, Syphilis, S. maligna, Lues venerea, L. Syphilis, Morbus Gallicus, M. Italicus, M. Neapolitanus, M. Hispanicus, M. aphrodisius, Syphilismus, Cacoehymia venerea, Venereal disease, Pox, French pox; *Fr.* Vérole, Maladie vénérienne, Mal de Naples, Mal Français, Maladie de Vénus; *Ger.* Venerische Krankheit, Lustseuche, Franzosensucht.

The subject of syphilis has engaged the attention of pathologists at different periods more perhaps than any other; and although treatise upon treatise has issued from the press of almost every age and country, there is at the present time, no single disease which is giving rise to more close investigation. The misfortune has been in this, as in too many cases, that exclusive views have generally been embraced: whilst one set of theorists has considered the disease to be specific; others have believed it to be common; and whilst, again, some have regarded it as capable of being removed without the agency of mercury; others—and some even of the present day,—esteem mercury as its “antidote,” and believe, that the system cannot be dispossessed of the *vice* without its agency. The truth would seem to be, that although the disease, when it has become constitutional, is a true cachexia, its primary forms may be removed by simple treatment,—that some even of the constitutional forms may be cured in this manner; but that, in other cases, a revellent action becomes necessary; and remedies are demanded, which are capable of breaking in upon the morbid condition of the system of nutrition.

From the statistical inquiries of various excellent observers, Messrs. Fricke, Devergie, Rufz, Rapatel, L. Desruelles, Judd, and others, it would appear, that of about 80,000 cases of syphilis, subjected to experiment, the proportion of relapses or of secondary affections—where the primary symptoms in the sexual organs had been treated without mercury—was, at its lowest estimate, reduced to *ten*, at its highest to *twenty* in the hundred; and results, obtained in this country, have been at least as favourable. “We are perfectly willing”—says a recent British writer—“to admit, that the great irregularities, which characterize syphilis, and the very different conditions under which it appears, give less force to statistical evidence applied to its elucidation than to that of many other diseases; yet making every due allowance for data thus collected, and taking into consideration the incompetency of many of the individuals to observe accurately, and the party feeling of others, together with the perplexities arising from the maladministration of mercury, &c., it cannot be denied, that a sufficient mass of observations remains to establish the fact, that a large majority of primary syphilitic affections get well, like ordinary ulcers, under simple treatment, or even by the unaided powers of the constitution; and that of those cases of secondary disease which do occur, although, perhaps, subject to more frequent relapses, the greater number will ultimately wear out, or be overcome by the mere action of the secretory and excretory functions; thus leaving but a small remainder of inveterate instances to be combated by other means.” (*British and Foreign Medical Review*, vol. v. p. 7.)

In another place, the author has treated of URETHRITIS, and of that

which constitutes gonorrhœa virulenta. This has been supposed to be produced by the same virus as that which occasions syphilis; but the results of inoculation, and, indeed, of general observation, sufficiently show, that gonorrhœa and syphilis are by no means convertible diseases, and that if a primary syphilitic sore sometimes results from the application of gonorrhœal matter, it may be owing to the person from whom it was taken being affected simultaneously with both diseases.

The intimate investigation of syphilis is considered, by common consent, to belong to the domain of Surgery, and, accordingly, it is treated of in detail in works on that department, and still more in the valuable monographs, that have been published by many excellent observers. It may not be amiss, however, to make a few general remarks upon the

**Treatment.**—This is of two kinds, the *simple*, and the *revellent*. In the simple, the management is partly hygienical, partly therapeutical. The diet must be light, and not sufficient to entirely allay the appetite; and as the patient recovers, the quantity may be greater: diluent drinks are allowed freely, such as barley water, and decoctions of liquorice, or flaxseed, alone or mixed with milk,—several pints being taken in the day. Perfect mental and corporeal quietude must be enjoined; with which view the patient should remain in bed; the bowels must be kept open by gentle laxatives, or emollient enemata; the temperature of the room be uniform, and the air pure. In the convalescent stage, exercise or change of air may be recommended.

As regards the topical management, strict attention is paid to cleanliness and to proper position of the affected parts. The simplest dressings are made to the sores; and the frequent employment of leeches to the part, even when the surface is ulcerated, is recommended. When the ulcer becomes cleansed, stimulating lotions favour the cicatrization. This plan, variously modified, comprises the simple treatment; but should it fail, or consecutive symptoms arise, it may be then advisable to have recourse to the revellent.

It is on the revellent treatment that the practitioner generally places his full reliance in syphilitic cachexia. Formerly there was but one agent—mercury—which was relied on with this object; and, on the whole, in confirmed constitutional syphilis, mercury, perhaps, deserves the preference, provided there be no contraindications to its use. At the present day, the form of preparation most commonly, perhaps, prescribed is the protiodide; but others prefer the corrosive chloride, and others, again, adhere to blue pill, or to the mild chloride, or to friction with mercurial ointment. By modern writers on syphilis especially, a combination of opium with the mercurial is strongly recommended.

Of late, iodide of potassium—simple, and ioduretted—has been universally employed in the various forms of constitutional syphilis, and the author has seen marked benefit from it in several cases. It has been found most efficacious in the tertiary forms of the disease, in which M. Ricord thinks mercury is generally inefficacious.

The revellent treatment, it will be seen, reposes upon the modified effect induced on the tissues by certain articles, which probably alter

the condition of the fluid of the circulation, and through it, that of the system of nutrition in every part of the economy; it has, however to be persevered in for some time, and, of course, to be varied according to the different forms which the disease may assume, but its general application is now admitted by all, in cases which do not yield to the simple treatment. For the special modifications that may be demanded, the reader must consult the various modern works on external pathology; and especially the excellent monographs on syphilis already cited.



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Fig. 72.



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Fig. 46.



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Fig. 85.

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Fig. 164.

CORNUS FLORIDA  
(Dogwood.)



Fig. 54.

ACONITUM NAPELLUS.  
(Wolfsbane.)



Fig. 31.

HELLEBORUS NIGER.  
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